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Manuscript Report 230e

Management of Science and Technology Information Projects Supported by IDRC

July 1989

The International Development Research Centre is a public corporation created by the Parliament of Canada in 1970 to support research designed to adapt science and technology to the needs of developing countries. The Centre's activity is concentrated in six sectors: agriculture, food and nutrition sciences; health sciences; information sciences; social sciences; earth and engineering sciences; and communications. IDRC is financed solely by the Parliament of Canada; its policies, however, are set by an international Board of Governors. The Centre's headquarters are in Ottawa, Canada. Regional offices are located in Africa, Asia, Latin America, and the Middle East.

Le Centre de recherches pour le développement international, société publique créée en 1970 par une loi du Parlement canadien, a pour mission d'appuyer des recherches visant à adapter la science et la technologie aux besoins des pays en développement; il concentre son activité dans six secteurs : agriculture, alimentation et nutrition; information; santé; sciences sociales; sciences de la terre et du génie et communications. Le CRDI est financé entièrement par le Parlement canadien, mais c'est un Conseil des gouverneurs international qui en détermine l'orientation et les politiques. Établi à Ottawa (Canada), il a des bureaux régionaux en Afrique, en Asie, en Amérique latine et au Moyen-Orient.

El Centro Internacional de Investigaciones para el Desarrollo es una corporación pública creada en 1970 por el Parlamento de Canadá con el objeto de apoyar la investigación destinada a adaptar la ciencia y la tecnología a las necesidades de los países en desarrollo. Su actividad se concentra en seis sectores: ciencias agrícolas, alimentos y nutrición; ciencias de la salud; ciencias de la información; ciencias sociales; ciencias de la tierra e ingeniería; y comunicaciones. El Centro es financiado exclusivamente por el Parlamento de Canadá; sin embargo, sus políticas son trazadas por un Consejo de Gobernadores de carácter internacional. La sede del Centro está en Ottawa, Canadá, y sus oficinas regionales en América Latina, Africa, Asia y el Medio Oriente.

This series includes meeting documents, internal reports, and preliminary technical documents that may later form the basis of a formal publication. A Manuscript Report is given a small distribution to a highly specialized audience.

La présente série est réservée aux documents issus de colloques, aux rapports internes et aux documents techniques susceptibles d'être publiés plus tard dans une série de publications plus soignées. D'un tirage restreint, le rapport manuscrit est destiné à un public très spécialisé.

Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.

IDRC-MR230e

MANAGEMENT of Science and Technology Information Projects Supported by IDRC

Record of a meeting of Science and Technology Information Project Managers
held at the International Livestock Centre
for Africa (ILCA), Addis Abba, Ethiopia
November 21 - 25, 1988
Sponsored by the International Development Research Centre (I.D.R.C.)

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Acknowledgement

The staff of the Science and Technology Information Group of the Information Sciences Division wishes to acknowledge the valuable contributions made by the following:

- The Office of Planning and Evaluation.
- The Office of the Secretary and General Counsel.
- The Fellowship and Awards Division.
- The Library.
- The Office of the Treasurer.

In addition, particular thanks is extended to:

- The Manitoba Institute of Management Inc.
- Ms. Tracey Goodman.
- The Staff of the International Livestock Centre for Africa, in particular, the Training Division.

Organizing Committee

This meeting was organized by the STI Program Staff of the Information Sciences Division of the International Development Research Centre (IDRC)

- Kieran Broadbent (Associate Director) - Meeting Administrator.
- Ghislaine Lemieux (Program Assistant) - Meeting Coordinator.
- Yong-Ja Cho (Senior Program Officer - Earth & Marine Sciences, and Science & Technology Information Systems.
- Renald Lafond (Senior Program Officer - Industry, Technology and Shelter).
- Pat Thompson (Program Officer - Agricultural Information).

IDRC Resource Persons

In addition to the STI Group, IDRC was represented by the following:

- D. A. Bekoe-Regional Director for Eastern and Southern Africa (EARO).
- Paul McConnell - Deputy Director - Information Sciences Division.
- Jean-Paul Joly - Regional Controller (EARO).
- David Balson - Senior Regional Program Officer - (EARO).
- Issa Omari - Senior Regional Program Officer - Fellowships and Awards Division (EARO).
- Antoine Terjanian - Senior Regional Program Officer for the Middle East and North Africa (MERO).
- Alioune Camara - Regional Program Officer for West and Central Africa (WARO).
- Shahid Akhtar - Associate Director - Socio-economic Information (SEI).
- Alastair Stewart - Legal Officer - General Counsel Unit.
- Andrew Asibey - Planning Officer - Office of Planning and Evaluation.

Foreword

Science and technology is essential to the achievement of socio- economic development objectives. Fundamental to the development process is the role of information for the transferring of scientific and technical knowledge essential to the attainment of social and economic improvement.

In recognition of this, the Information Sciences Division of the International Development Research Centre (IDRC), assists developing countries to develop and run appropriate information systems through the funding of projects negotiated with recipient institutions. To date, the Division has supported more than 400 such projects with total grants exceeding 80 million dollars.

The grants, for the most part, go towards developing institutional, regional and national capacities to manage information in order to meet the needs of the many levels of users in the developing country regions.

One of the issues of importance to the Division has been the development of human resources, in particular within projects, in order to ensure the permanent strengthening of indigenous capabilities to carry out activities after the project has ended. To date however, the issue of project management has received little attention from the point of view of training because implicit in the negotiating and funding of the project has been the assumption that the project will be properly managed.

Although IDRC is distinguished in its overall approach to monitoring and advising the projects it supports, it has been recognized that the role of the project leader/manager in bringing a project activity to successful completion, and ultimately long-term sustainability is crucial to the process. It is felt, that more formal approaches to project management should be considered.

The project management meeting, therefore, sought to increase project management capacity and identify project weaknesses and gaps in knowledge required for better running of the projects. At the same time it aimed to review the broad scope of STI projects and to lay the groundwork for greater mutual sharing of information, collaboration and cooperation amongst STI project managers.

The management issues normally considered as necessary to project execution, e.g. financial reporting, program planning and other relationships with the donor were linked to existing IDRC procedures . However, as is clearly shown in Fig. 4.4 page 22, there were number of issues identified by project leader/managers that have to be taken into consideration. These issues included: how to set specific and measurable goals; how to build an effective project team; the ability to make oral and written reports; to be acquainted with the overall mission of one's own organization.

It was a major goal of this meeting to link these issues all together in a realistic package that when completed, and taking into account the participant's feedback, would represent an amalgam of subjects covering all areas related to project management from the point of view of both IDRC and project managers.

One concern of the Division is the efficiency of such an undertaking: that the final results would represent a useful investment of the resources both human and financial that went into the planning and execution of the meeting that is, the results should have a multiplier effect. A Division wide manual created from the material in this report will ensure its effectiveness as a tool for all projects the Division supports and perhaps at the same time could be used as a model for the Centre as a whole.

Martha B. Stone
Director
Information Sciences Division

Preface

This preface is a summary of the remarks of the opening addresses made by the distinguished people listed at the bottom of this page. Their remarks covered a number of areas and are summarized under the following headings.

- A Unique Meeting - A Unique Opportunity.
- Objectives of the Meeting.
- The Information Sciences Division.
- IDRC's Eastern and Southern African Region.
- IDRC Institutional Support.
- The Host Institution - ILCA.

A Unique Meeting - A Unique Opportunity

Dr. Bekoe in his address recognized the importance and uniqueness of the meeting in several ways.

First, the project leaders and IDRC Program Staff attending the meeting were from institutions in Africa, Asia, the Middle East, Latin America and the Caribbean. This wide geographical coverage brought a diversity of social and cultural richness to the deliberations.

Second, seldom do a group of professional information scientists have the opportunity to meet in the Third World and share their experience and expertise. Too little importance is put on management in professions outside of professional administration and management. It is usually assumed that if you are bright and competent enough in your field of specialization, you should be able to manage a project, an institution, sometimes a whole country.

Third, the diversity of the group - from different institutions, different target audiences, different information resources, different areas of subject interest and different job titles provided a unique opportunity to share information and resources and to learn from the experience of others.

Fourth, although from diverse situation, the participants had great deal in common. They were all project leaders in the science and technology information fields, all were IDRC grant recipients and all are intermediaries between users and the sources of information.

Thus the meeting presented the participants with a rare opportunity. The diversity stimulated discussion yet the commonality allowed each to learn from the experience of others in formal sessions or in less formal encounters.

This theme also cut across the other opening addresses. Mr. McConnell, pointed out that he was not aware of any previous gathering of IDRC project leaders where the principal objective had been to focus on substantive management issues.

Objectives of the Meeting

Mr. McConnell followed up these points by spelling out the objectives of the meeting:

1. To improve the management of IDRC-funded information projects.
2. To improve the management skills of project leaders.
3. To encourage the exchange of experience, ideas, and knowledge among participants. To build on common experiences and make it possible for the strong to help the weak and those with expertise to help by sharing it with others.

These objectives were being pursued by the Information Sciences Division as a way of addressing its mandate to strengthen the management of scientific, technical and other information projects as part of the process of applying knowledge for development. Long before the world had entered the "*information decade*" of the 1980's, IDRC had placed conspicuous emphasis on the potential contribution of information science to the development process.

Information specialists have a special responsibility to ensure that the value of information as a reusable resource for development is fully recognized. They have the keys to storehouses of information, but, Mr. McConnell asked, "*Are we using them? We are aware of the power of information but are our clients?*

Mr. McConnell cited a recent study where a survey of development planners revealed that the use of library facilities was not correlated with subject area; instead, it seemed dependent on individual awareness or perceptions of the service they would likely receive. A solution, then, is for closer partnerships between information providers and information users.

The literature is full of descriptions of the ambivalent attitude toward the information profession that was evident from the above study. The opportunity for us is to use the project management skills that are developed and presented at this meeting to plan and implement our Information Sciences projects in a way that encourages better use of our outputs.

The Information Sciences Division

IDRC in its approach to Information Sciences has avoided a narrow, academic definition. Instead, they have adopted a broad interpretation that encompasses many different facets of information flow. The Information Sciences Division helps fund applied, problem-oriented information activities that have clearly identified objectives, users, beneficiaries, methodologies, outputs, and future developments when IDRC funding expires. Activities financed by the Division have included software development, creation of information services, design of national information systems, establishment of post-graduate information sciences courses, adaptation of information technologies and so on.

These activities have taken place in areas that are a high priority to developing countries such as debt management, agricultural research, community development, water supply and sanitation, land use, and small-scale industries.

The Division is made up of five groups:

- Three program sectors:
    - Science and Technology Information
    - Socio-economic Information
    - Information Tools and Methods
- The Computer Systems Group
- The IDRC Library

During its eighteen years of operation, Information Sciences Division has supported over 400 projects, costing in excess of 80 million Canadian dollars.

The three objectives guiding the work of the Division are as follows:

1. To improve the management and utilization of information for development research and change.
2. To build indigenous capacity to manage information and promote its use.
3. To foster cooperation and information sharing.

IDRC's Eastern and Southern African Region

This region is administered by IDRC's office in Nairobi. The region comprises twenty countries and stretches from Djibouti and Addis Ababa in the north to Lesotho and Swaziland in the south; from Angola in the west to Mauritius in the east. In the region there are countries with populations of 25 - 40 million and others with populations of less than one million. There are small islands with distant neighbors as well as landlocked countries. There is also a huge diversity in terms of government organization, systems and philosophy.

The physical environment in the region is fragile and subject to more than the occasional drought, to serious deforestation and desertification and soil deterioration problems. The physical conditions range from desert to semi-arid to vast fertile lands, sometimes in the same country. It has gone through and continues to experience civil wars, wars across frontiers and the consequent serious refugee problems, loss of life and serious damage to property, infrastructure and natural resources. All these problems are superimposed on the usual problems of development including the provision of the basic needs of food and adequate nutrition, water, shelter, energy, good health, education and gainful employment.

The region also has a very high rate of urbanization and, with the rest of sub-Saharan Africa, a difficult and well-publicized debt problem which constitutes a major obstacle to development.

The problems of the region cannot be solved without input from science and technology. Yet the problems associated with the application of science and technology to development issues are formidable: education and training to acquire expertise, the development of national capacities for decision-making, the effective implementation of decisions, use of research results, development of infrastructure. The hope is that meetings like this will allow project managers to improve their management skills in order to use science and technology information to overcome some of these problems. The location of this meeting emphasized the importance now being placed on African issues.

IDRC Institutional Support

In recent years, IDRC has been reviewing its performance with a view to ensuring that its support to institutions in developing countries is effective and does make a significant impact on development. Possibilities for new and wider means of support including broader institutional support as opposed to strictly project support are being explored. Persistence of support over a period of at least 5 -10 years has been suggested as the best means of ensuring sustainability after IDRC funding comes to an end. Clearer conception, planning and implementation of usable results are being stressed as an integral part of project proposals.

The Host Institution - ILCA

Dr. John Walsh introduced the International Livestock Centre for Africa (ILCA). He stated that ILCA is not a big institution. The budget of 15 million U.S. dollars is not even as large as that of the Michigan State University Football team. So the question for us - and also for other IDRC projects is how does a small institution act as if it is big? How can a small centre like ILCA affect change on such a vast continent?

The national institutions in Africa spend about 4 to 6 hundred million U.S. dollars per annum on agriculture research. Probably about a hundred million of that on livestock research. ILCA's job is to attach themselves to those immense resources. The Western World spends hundreds of millions on research and the role of ILCA is to be aware of this activity and get out relevant results (relevant information) to our colleagues in Africa.

At ILCA success is measured as improvement in sustainable economic output of livestock products. ILCA is very much a driven centre - driven toward this objective.

Since Africa is a continent of vast diversity, ILCA cannot expect to develop livestock production for all environments. But what it does is to help national organizations develop the technology which is suitable to the environment in which they are operating. The central theme of ILCA therefore, is to develop its own capabilities, (bringing resources from overseas if necessary) and to assist national colleagues in Africa to develop these technologies for themselves.

ILCA is organized around six research thrusts. Within each thrust there are a set of themes. For instance within the cattle meat and milk thrust there are six themes. The themes are reproduction, control of reproduction, feeding and management, milk processing, economics, breed evaluation and one that is particularly vital - network coordination. It is through this networking that ILCA relates to national organizations in Africa. There is a network for each thrust.

A quarter of a million dollars is set aside for the network co-ordinator's office and his job is to offer services to the national organizations.

The network can be separated by thousands of miles but the coordinator's job is to meet needs for training, publications, and on-going research. The typical researcher in Africa is very isolated and must have access to information. ILCA's documentation team, operating with IDRC's help, has been most effective in making useful information available to the network.

Prioritizing ILCA's programs and activities is a very special skill. More and more of our work is coordinating the work of National Agricultural Research Services. For example, ILCA will approach a group of scientists and bring their individual projects together into a proposal then seek out a donor who will provide money for that initiative.

ILCA tries to do what National Organizations find very difficult to do: assist in and co-ordinate collaborative research. By doing this ILCA tries to make a small organization effective in a very large continent.

This Preface is a summary of the opening addresses made by:
Mr. Kieran P. Broadbent, Associate Director, Information Sciences, IDRC.
Dr. D. A. Bekoe, IDRC Director for East Africa.
Mr. Paul McConnell, Deputy Director, Information Sciences Division.
Dr. John Walsh, Director-General of the International Livestock Centre for Africa (the host institution).

Introduction

Keynote Address: Dr. Abiy Kifle

Mr. Chairman, Representatives of IDRC, Distinguished Participants of STI Project Management Meeting, Invited Guests, Ladies and Gentlemen.

Allow me to express my heart-felt pleasure for the honour accorded to me to be present on this occasion to welcome you all to this very important and timely meeting of STI Project Management, which is the first of its kind in our capital city.

I feel a special sense of satisfaction in welcoming those of you who have come from institutions outside Ethiopia to participate and contribute to the success of this important meeting.

The presence of so many people from so many institutions to discuss various aspects of Management shows the existence in developing countries of a tremendous potential for genuine understanding and cooperation among those who are really concerned with STI Project Management. I call upon each participant to take full advantage of this unique opportunity by actively participating in the various discussions of the meeting. The concerns that are evident from your agenda are indeed those that all countries and organisations should be seriously concerned with in the development of science and technology in developing countries.

The meeting is timely because it represents good effort to analyze the issues faced by STI project managers in the developing world over the last decade or so. STI Project Management, is a necessary activity in the developing world, which needs close attention to its efficacy and effectiveness in its own environment. The present meeting will indeed be instrumental in providing the stimulus and necessary guidelines for successful implementation of STI Projects. This meeting is also of special significance to the developing countries because there has been an increasing recognition of the fact that without an objective support and understanding of STI and its management, our socio-economic plans, and hence our science and technology policies and plans, are less likely to succeed. Effective and productive management of information will enhance our knowledge and expertise in the specific research fields. This in itself will be a step in the right direction in our development efforts.

The Science and Technology Knowledge Gap

Distinguished Participants, the vast prosperity gap cleaving the developing and the developed parts of our globe is a result of the science and technology knowledge gap between the two parts of the hemispheres. This North-South dichotomy is one of the most serious problems of our time as we near the end of the present century. Day by day, as new advances in information technology and biotechnology come out of the laboratories in the developed countries, our present world of "*haves*" and "*have nots*" threatens to turn into something even more unjust and lastingly skewed; a world of "*knows*" and "*knows-nots*".

The developed countries' recent leap in economic development is mainly due to making the most of their scientific and technological potentials. Consequently, it is only natural for developing countries to concentrate their hopes and aspirations for more research and rapid development of the fruits of science and technology. The keen interest the developing hemisphere- states in technology transfer, reflects these hopes. As the 1960 programme for the first UN development decade states, "*the problem of development is not only production, but the capacity to produce which is inherent in people*", it is not only the flow of "*know-how*", which in all cases, cannot be transferred and applied in its totality in developing countries, but the capacity to inquire about why things happen and why things work, that is the kernel of development.

However, many development problems can be solved by scientific and technological means. Existing, adapted and/or new technologies can contribute to industrialization, create production capacities to satisfy domestic needs and provide export earnings, thus helping developing countries break out of their traditional economic role of mere raw material suppliers and importers of industrial goods.

Using Science and Technology for Development

Mr. Chairman, the use of science and technology for development, as well as successful technology transfer, hinges on adequate scientific and technological infrastructures in the developing countries. Research and development efforts in developing countries without a sufficient infrastructure and without linkage to the productive sector only tie up the little research and development resources often available without sufficient benefit for the developing countries. Technology transfer not supported by an appropriate economic and technological infrastructure in the developing countries increases the technological dependence. Some of these crucial infrastructures include information support, the promotion of linkages of research and development with the overall education and training system and the productive economy, industrial promotion and local technology centres.

Having appropriate policies regarding transfer of technologies does not in itself guarantee that it plays an effective role in meeting developmental objectives. As we are all well aware, developmental objectives of all countries are not the same. In some countries, industrialization is effected in ways that would directly help the masses to elevate their standards of living. On the other hand, there are some countries that have less concern for the economically bottom levels of society and are only seeking to pull the society up from the top. It is evident that to direct the use of science and technology to meet the particular socio-economic problems of the large majority of the people, science and technology must be directed and mobilized to these objectives. It must, therefore, be stressed again and again that the usefulness of successful transfer of technology depends on its contribution to the desired economic developmental goals of each country concerned. It follows that the generation of science and technology must be kept close to the final beneficiaries and users. Otherwise one would establish complex networks without ties with production which are likely to involve costly structures with very few development benefits. It is equally true that emphasis on adoption of foreign technology to accelerate local economic growth without the development of an appropriate local infrastructure will accelerate the use of unrestricted foreign technology since it is the only one which is readily available and which has no opportunity cost.

Distinguished Participants, the challenge before scientists and technologists and the moulders of national and international policies is to direct the already known and proven capacities of science and technology towards the removal of hunger, and the diseases of privation.

Rural Development

Science and technology institutions should place the highest priority on the solution of rural problems. Science and technology have, by and large, historically been an ally of industrialization and urbanization and have not given adequate attention to a comprehensive study of rural problems. The drain of talent from rural to urban is the oldest form of the brain drain. No less notable is the economic drain from rural to urban areas. Of the highest priority is work on the preparation of an integrated inventory of land, water mineral and other natural resources and the development of scientific land and water use plans. A more careful examination of weather in relation to crop and animal productivity is needed for the improvement of agriculture. Research and information on soil - crop - weather correlation help peasants to arrive at the correct decisions and interpretation of short range weather outlook. Research related to the control of the menace posed to crops through the triple alliance of pests, diseases and weeds if stepped up would improve agriculture. In addition, fertilizer technology should concentrate on local problems and local solutions so as to use fertilizers as an effective trigger in any national policy of stabilizing food production: forestry research supports the development of quick yielding fuel and pulp trees. Furthermore, animal science research increases the production of domestic animals, poultry and fish by breeding, reduction of fertility and provides better nutrition and health.

Reducing Post-Harvest Losses

While much attention is being given to agricultural production, the efforts made at conservation and processing are far from adequate. Post-harvest losses of up to 30% is common in most developing countries. Reduction of this percentage cannot be achieved without a sound policy towards developing adequate scientific and technological capacity within the region and utilization of the knowledge at national and local levels. The successful prevention of these losses alone can make many developing countries self-sufficient in food and raise their nutritional level. In the process of prevention of these losses, alternative rural and urban employment can also be generated that can contribute to raising income levels. Substantive post- harvest food losses occur at various stages of handling, storage, transport and distribution of the produce during milling, processing, conversion and utilization. Assessment and identification of the nature and magnitude of their losses in developing countries help in developing and utilizing appropriate modern and traditional technologies which can increase food supplies and make many countries self-sufficient without additional demand on land and other inputs.

Solar Energy

Mr. Chairman, public awareness of the shortage of fossil supplies of energy has led to increasing efforts to tap alternate sources of energy. Particular importance is being placed on using the most elementary source of energy of our planet: the sun. To tap these inexhaustible natural energy supplies, technologies are in the process of being developed which permit them to be converted and utilized in an economically viable manner.

The use of the sun to cater for energy requirements has two advantages: Firstly, it represents an almost inexhaustible source of energy and secondly, the energy obtained from the sun's rays has a lower environmental impact than that obtained from fossil fuels, since the environment is not polluted by any harmful substances.

Even though it is estimated that by the year 2000 solar energy will cover up to 5% of the primary energy requirements in Northern and Central Europe, the sun will be able to play a far more significant role as an energy source for the countries where there is a great deal of sunshine. Already there is a promotion of this energy source in a number of developing countries of Africa, Asia and Latin America. For instance, a very interesting project has been developed in Egypt of a solar absorption type refrigeration system which uses the heat of the sun to keep food fresh by using the radiation energy to operate refrigeration units. In the Middle East, where fresh drinking water is rare, a sea water desalting plant produces drinking water using heat pipe solar collectors. Solar power systems which can be used to generate electricity and pump water are being developed in Africa and India. There is also a talk of "*a solar village*" in Mexico where an integrated solar energy system is to be created for a village of 250 inhabitants, which is to supply energy for cooking, refrigeration, desalting sea water and treatment of the sea water so that it may be used as drinking water.

Distinguished Participants, solar powered research began around half a century ago. Its usefulness and promise as an effective vehicle for development is increasing. Information about such systems should be readily available. Information such as assessments of its economic potential, and technological details on how to proceed to solve scientific and technological problems should be systematically collected and stored for use by scientists, engineers and researchers. Information should be obtained through literature searches and through questionnaires sent to institutions and individuals interested in such projects and evaluated in terms of the knowledge and experience of the information scientists. Information should include some current programmes which are active and very innovative in different institutions and countries. Such information on solar energy systems will no doubt show a wealth of experience that can be shared throughout the world.

STI workers should develop information systems and networks that can collect, process, store and disseminate facts and figures, not only on solar energy, but also on the new and renewable energy sources such as wind, biomass and geothermal. Such information is fundamental for anyone dealing with energy problems, specially for users in the developing countries. Thus, information services can respond to the solution of the energy problem by employing conventional and modern information handling and communication techniques by putting the right information into the right hands and at the right time. This will help networks and centres of excellence transferring and sharing energy information through a variety of channels, to avoid unnecessary duplication of effort and to provide specialized services to all users - - research and development personnel, planners, policy makers, manufacturers and the public at large. If one has this kind of diverse element of energy information, taking into account local social and cultural conditions, developing countries can help themselves in dealing with their energy needs and speed their development, thereby improving the quality of human existence.

Information Systems and the Use of Science and Technology for Development

Mr. Chairman, Distinguished Participants, information systems have a major strategic impact on the use of science and technology for development. In this age of scientific and technological revolution, information systems can no longer be treated as purely technical and/or operational matters. Information systems have moved beyond providing support to the development and dissemination of science and technology. In fact, they have become increasingly its core. Their effect on research, on innovation, on the activities of industrial centres, research and development institutions, in the agricultural and industrial extension, and other strategic endeavors in science and technology is indeed great.

STI managers could be characterized as promoters or movers of science and technology activities. Though managers of STI at particular locations seem to be small in number, their actions are greatly amplified by the actions of so many scientists, engineers, industrialists, policy makers and planners. STI is the focal point for "*traffic of knowledge*".

The formulation of science and technology policies in a any country begins with the determination of economic and social objectives of the country that science and technology is to serve or to help achieve. Once these goals are set, the policy-makers can turn to the selection of technology by which to pursue their goals. The sources of technology available are mainly from the international community. The process of selection of the technologies is itself significant in determining what technologies are chosen. In selecting and developing technologies the role of the STI management is critical. It is critical because of the significant gaps in the capabilities of developing countries in collecting and storing information as to the available technologies already existing in the world. Two issues surround availability - - the existence of technology and access to it by the developing countries. Not all the information or technologies created by private and/or governments will in fact be accessible or even in use. When it is not in use, little information will be disseminated. It is therefore, necessary to find ways and means of gathering information on technologies that exist, whether or not they are tried.

There are many routes through which technologies can flow to countries and companies seeking them. Two of them is through published materials and conferences of many sorts. In developing countries, where there is little indigenous technology and few published sources, primary reliance has been on extension services provided by foreign sources through technical assistance agreement.

Summary

Mr. Chairman, to summarize, one can state the following roles of the information intermediary in developing countries in responding to STI needs.

1. To help identify research and development problems for the scientists and researchers to formulate sound interdisciplinary projects to find adequate solution for them;

2. To identify, assess, select and help transfer of appropriate technologies from all over the world to make the best possible choices in cooperation with user agencies;

3. To operate an up-to-date and current awareness services for the policy makers, planners and other users to keep them abreast of new developments in science and technology that may be of interest to national development, for instance, by starting an information newsletter;

4. To create a needs-based information service related to science and technology related development research. In this regard, development of abstracting services should be undertaken, and maximum possible use should be made of the abstracting and documentary services already available from other organisations such as CABI, FAO, WHO, UNIDO and others;

5. To exchange information on research and development projects in progress, and to identify problems of research and development through holding seminars, workshops and symposium for the members of such inter-institutional development projects;

6. To create intercountry network for documents, journals, and books with developed, and especially, developing countries.

Mr. Chairman, I have mentioned several times the terms "*transfer of technology*", "*appropriate technology*" and "*technologies adapted for developing countries*". This does not mean that developing countries must not have the chance to participate at the forefront of science and technology or a least not be aware of what is going on. Only by doing so will the developing countries be able to become equal partners to the world of tomorrow. The urgency of this task is even greater now than it has ever been because of the challenge offered by such sciences as informatics, biotechnology and microelectronics. The advances in these fields are presenting the world with a scientific and cultural revolution equal in importance to the industrial revolution. Just as those countries that were not able to profit from the industrial revolution suffered subsequently, so too will those that do not make use of this new revolution. Developing countries should reap the fruits of "*gene revolution*" as they have already done with "*green revolution*".

Dear Participants, through the course of your discussions in the next five days you will not only enrich your managerial abilities of STI projects but will have a more direct interaction with the Ethiopians at large. I am confident that this meeting will have a great impact on the effective management of STI projects. We, at Addis Ababa University, shall take advantage of your deliberations and recommendations. The reason is obvious. We know very well that "*the future belongs to science and to those who make friends with science*". STI project management will surely accelerate the making of friends with science.

It now remains for me to thank you for your presence here this afternoon and for your attention. Particularly I would like to convey my sincere thanks and appreciation to Mr. Broadbent for giving me the opportunity to speak at this meeting and make known my views on the topic of the role of science and technology for socio-economic development.

While you are here in Addis, I hope you will give some of your time to visit Addis Ababa University, its library and documentation centres.

You have an important task to perform. I wish the STI Project Management meeting every success.

Thank you.

Dr. Abiy Kifle
President
Addis Ababa University

SECTION II

The Project Management Process

Chapter 1

The Information Sciences Division of IDRC and its Science and Technology Information (STI) Program

One of the ways in which IDRC is unique among development-aid agencies is that it has maintained a major program in the Information Sciences. This program provides grants for the establishment of better information systems in developing countries. The mission underlying the program is "*to promote the social and economic advancement of developing regions by providing researchers, policy-makers, and practitioners, in developing countries, access to the scientific, technical and other information they require for application to the problems of development*". The basic principle is to help countries help themselves. The general strategy is to support improvements in the flow of information from source to use. The basic tactics are to provide the means. Management is, therefore, a basic element in the development of information activities.

The projects which the Information Sciences Division supports attempt to:

- Improve systems, services, and tools for managing and using information relevant to development research and change.
- Build indigenous capacity within developing countries for the effective management and application of information for development.
- Foster cooperation and coordination in development research through information sharing.

The aim of the project management meeting was to strengthen these objectives. The STI program of the Information Sciences Division is implemented through four subprograms:

- Agriculture.
- Industry, Technology and Shelter.
- Earth and Marine Sciences.
- Science and Technology Information Systems.

Participants at this meeting represent information projects IDRC is supporting in these areas.

Agriculture

Access to food is one of the most urgent problems facing people in developing countries.

The Agriculture Information Program supports information activities in the agriculture sector aimed at the production of more and better food and at making it available to developing country peoples.

Emphasis is on the development of information systems which assist in providing access to information about crop and animal production systems, specific crops or commodities and related issues. Because the area of agricultural information is well covered globally, the focus of the program is to improve the capacity of developing countries to participate in international and regional information systems. The program also facilitates the movement toward more indigenous control and production of information and the development and management of national and regional information systems.

In addition to crop and animal production, subjects covered under this program range from issues dealing with the policy and organisation of agricultural research such as farm management, extension and agricultural credit to marketing which includes handling, storage and transport of agricultural goods.

The program places special importance on projects that promote the network concept of information resource sharing at the national and regional levels as well as the development of local grassroots information systems.

Industry, Technology and Shelter

Industry, Technology and Shelter information program consists of three main components: Industrial and Technological information, Energy information and Shelter information. The Industrial and Technological information sub-program aims at developing industrial information services that will assist small and medium sized industries (SMIs). It covers the wide range of information needs of small industries including: technological and technical information about patents, standards, equipment, quality control, management, and marketing. Projects may focus on all industrial sectors or be limited to a specific sector and targetted user groups. The program puts an emphasis on funding activities that increase access to information through active dissemination methods such as extension or consultancy services.

The Energy Information sub-program focusses on new and renewable energy sources and includes both bibliographic and numerical data.

The Shelter information sub-program is concerned with information about local building materials, low cost housing design as well as city and village infrastructure such as transportation information systems.

Earth and Marine Sciences

The Earth and Marine Sciences program has been developed on the premise that sustainable development cannot be achieved if developing countries cannot properly manage their natural resources and environment in support of their population. This program responds to expressed demands from the developing countries to develop and strengthen information systems and services in support of rational management of their natural resources and environment.

The focus of this program is the utilization of environmental information including baseline data related to food supply, energy sources and other resources essential for human well- being. This program supports information projects related to climate, fisheries and aquaculture, forestry and agroforestry, geology, water resources management (including irrigation and drainage), land use, soils and natural resources and environmental management.

Recognizing that management and conservation of natural resources and environment require local specific data, and that the usefulness of global data are often limited for national planning, this program emphasizes capacity building at national and subnational levels. However, linkages and cooperation with international and regional systems are encouraged when appropriate.

Science and Technology Information Systems

The objectives of this program are to assist developing countries in improving and managing their S & T research and development capability. In particular, this program supports projects which:

- Improve national and regional capabilities for managing multisectoral science and technology information systems and services.
- Improve capacity to manage information systems and services to facilitate national S & T policy formulation and implementation.

STI Program Directions and Thrusts

IDRC is committed to spreading knowledge. The STI programs of the Information Sciences Division echoes this commitment. Science is knowledge which in turn is applied as technology. Technology is transferred and its effects are evaluated. It should be enhanced through the feedback loop. Our projects stress the concepts of information sharing and obtaining feedback from the user to assist rational and appropriate decision making. Projects also promote indigenous capacity building in the development of information systems to:

- Identify and rank information needs.
- Locate and select information sources.
- Manipulate and process acquired information.
- Retrieve, repackage and disseminate information to a clearly defined clientele.

Depending on the topic, proposals are examined by program staff in the light of several criteria:

- Is it a national priority and a program priority for IDRC and specifically the STI sub-program?
- Does it make maximum use of local resources?
- Are there good prospects for tangible benefits to the rural poor either directly or indirectly?
- Are there similar activities to which the proposal can be linked?
- Are costs reasonable and are funds available?
- What are the prospects for long term viability?

The STI sub-program, has as a major priority, support for national information systems and networks, either in specialized fields such as post-harvest technology or in the broad field such as agriculture, industry, etc. Support to national systems stresses obvious global and regional links where efficient exchange of information is important. Support for specialized information activities also remains at the heart of the program and the development of mission-oriented services is encouraged, which are capable of providing poorer countries with greater access to information according to their defined needs. A good example of this has been the support given to the International Banana and Plantain Network (INIBAP) which works through a decentralized research system of four regional subnetworks and, where, as a result, information exchange is a high priority.

Regional information also commands our attention. This can operate both complementary to and supplementary to national systems. These regional systems should be able to store national data and respond to national inquiries particularly where the information has limited capacity at the national level ie. biogeographical information, climatic data, etc.

The Division expects to become increasingly involved in environmental and conservation issues as a result of increased global awareness of the problems of land, water and climate which are the basis of all human development. These broad areas can be further prioritized according to both subject content ie. soils, information or environmental relationship (desertification, drought etc.).

A further priority is industry, technology and development. Involved in this area are:

- Initiating income generation programs.
- Providing developing countries with opportunities to introduce innovation.
- Adapting technology.
- Fostering technology transfer of both modern and applied technologies.

IDRC does not support pure technical assistance. The interest lies in development of research capacity. Nor does it support attendance at meetings, seminars, workshops and conferences unless it is related to a particular project.

IDRC does not support profit organizations specifically, projects that seek profits as a major objective.

Individual research cannot be supported nor academic training unrelated to the project objectives.

Recognizing that priorities are constantly changing, IDRC is responsive to project proposals that aim to use knowledge and apply techniques that are in the best interests of developing countries.

Projects supported operate various types of information services. Their methods range from manual through semi-automatic to fully computerized services. They may be concerned with bibliographic control of a body of literature or factual data. The tools used are also varied. Use of the latest technologies is encouraged to enable developing countries to fully participate in the information age.

Capacity building at the national level receives our special attention. Experience indicates that global and regional systems do not achieve their full potential unless national participants provide the input required to take full advantage of the output. This can only be done through effective management; this explains why management is being emphasized in STI programs.

Chapter 2

The Project and its Relationship with IDRC

IDRC and its Information Sciences Division have realized that developing countries will be left behind in the rapid technological changes taking place globally, unless increasing efforts are made to help them develop national information services and systems. Therefore, it is critical to assist them to avoid dependence on external sources of information from industrialized countries. Many IDRC supported information projects are considered to be in the "*front line*" of this battle to keep up with the strategic use of information in the field of science and technology.

The Host Institution

Each information project supported by IDRC is situated within a parent institution, usually a national research centre, university or government department. It is important for IDRC to understand the capabilities of the host institution. In particular, IDRC needs to know whether the host institution has the authority to pursue project objectives,whether it has the outreach mechanisms required to assure that the project outputs will be utilized effectively, and whether it has a reasonable prospect for sustaining the project after donor funds are depleted. IDRC requires a *Recipient Contribution* to confirm the institution's commitment to the project.

Because of the relationship between a host institution and the IDRC project, it is important for the project manager to understand the institution's mission and mandate and how the information project fits into it. The project must honor the guiding values and business philosophy of the institution. Information projects cannot be sustainable in the long term if they are planned in isolation or unrelated to the host institution's manifest role.

Methodology

Project outputs are the tangible results, products, and services that have been generated by the project. The production and quality of the outputs is discussed in later chapters. In order to produce these outputs, the project should follow a sound methodology.

The methodology should be based on:

- Relevance of the objectives to the organization's mission and mandate.
- The options that are available.
- Knowledge of user needs.

To do this the program planners need a full understanding of:

- Clients or beneficiaries. This includes the direct and indirect clients of the parent institution. For example, the International Agricultural Research Institutes (IARCs) have direct clients which include the national agricultural research institutes (NARs). Whilst their indirect clients are the farmers and landless laborers.

The external environment. Effective project planning should always consider the environment within which the project must function. It can have a great effect on the project's performance. As an example, in the case of the National Agricultural Information Services the availability of regional data bases and international cooperative systems can greatly enhance the delivery of future project outputs.

- Priorities. Planning always involves priority setting. This is dealt in more detail in the chapter entitled "*Developing your Project Plans*". Briefly, setting priorities involves asking and answering the following questions:

  - Who needs the information?
  - What information do they need?
  - How should it be presented?
  - Why is it needed?
  - When is it needed?
  - Where will it be used?

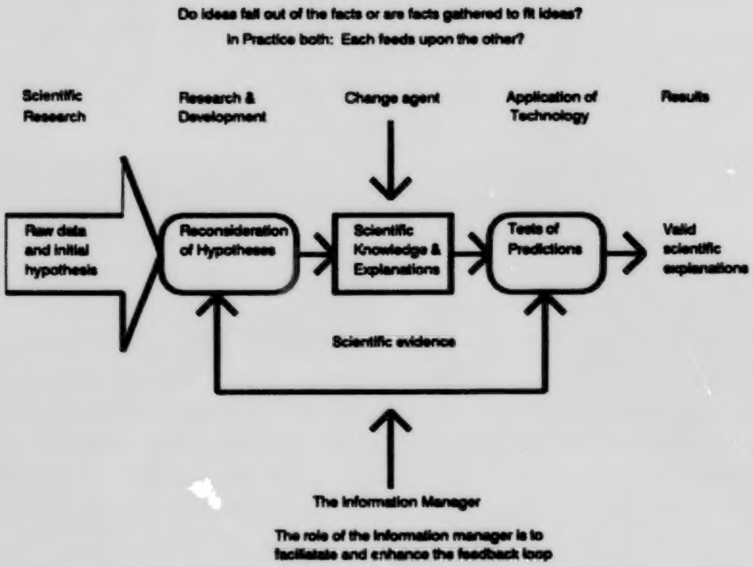
The criteria used for determining priorities include:

- Cost of services.
- Speed of delivery.
- Effectiveness of the information.

Feedback

The most effective managers arrange to have the users involved in the development of the project plans and in the design of the outputs, and continually utilize their views to refine services. (See Fig. 2.1)

Fig. 2.1 The Information Manager


Do ideas fall out of the facts or are facts gathered to fit ideas?
In Practice both: Each feeds upon the other?
Scientific Research
Research & Development
Change agent
Application of Technology
Results
Raw data and initial hypothesis
Reconsideration of Hypotheses
Scientific Knowledge & Explanations
Tests of Predictions
Valid scientific explanations
Scientific evidence
The Information Manager
The role of the information manager is to facilitatate and enhance the feedback loop

Managers who allow their projects to become self-directed (as opposed to user-driven) quickly find that their output begins to lose value among users and clients.

There is a variety of ways that project managers can obtain the input of users including:

- Use of questionnaires and surveys, informal contacts and building networks.
- Conducting frequent user evaluations.
- Organizing "*open days*" or "*information days*" to "*show and tell*" potential users and the parent organization what the project has accomplished to date.

The Project and Its Relationship with IDRC

The project manager must take responsibility for managing the relationship between the project and IDRC. This job is done according to the principles of "*network management*" discussed later. It involves a continuous dialogue internally with the parent institution and externally with IDRC.

Building Commitment

Little success can be expected unless local commitment is high. To strengthen local commitment, it is important to involve representatives of the host institution and related partners in all project procedures from Analysis down to Evaluation and Disengagement.

Seeking Management Assistance

Sometimes it is necessary for a project manager to request assistance from a consultant or specialist. Generally, IDRC looks favorably upon the use of consultants for short periods of time to solve problems, organize workshops, prepare proposals etc. The preference is to hire consultants resident in the region or those that have a good knowledge of local conditions. The usual process is to make the selection decision in consultation with the program officer. When making these decisions, the program officer will want to explore the opportunities for South-South cooperation before agreeing to a North-South link. Most consultancy agreements are administered directly by IDRC. However, when local consultants are used, the project manager is usually responsible for administering the contract. Whether a local, regional or international consultancy agreement is the result, a written consent of agreement with strict terms of reference is required. Also required in each agreement is a written report prepared for the project but which must be made available to IDRC.

IDRC is always ready to offer advice and can often make suggestions about how other projects have solved a particular problem or dealt with a particular issue. Project leaders should not be afraid of approaching IDRC on any matter.

Chapter 3

Profile of STI Projects

In preparation for the Addis Ababa meeting, twenty-six project managers were asked to prepare an information paper about their project, its structure, organization and how it was planned and managed. The following is a consolidation of the information that was submitted. Since the projects selected for this meeting represent a cross-section of projects supported by the STI group, what emerges from this analysis can be considered a STI project profile.

As a result, the problems identified in the synthesis were used to refine the agenda of the meeting. It was expected that project managers would expand on the comments made in the papers and that points not covered in the original submissions would be brought to the attention of the meeting.

General Observations

Type of Project. The projects in the STI group may be international, national or regional in scope. The twenty-six under study included five international, ten regional, and eleven national projects covering the subject areas of agriculture (crop and animal production) industry and technology, marine resources (fisheries, seaweed), energy, and forestry.

The projects range from information systems and support for network development to technical assistance and problem solving through information services and resource sharing. They provide bibliographic and non-bibliographic information including statistical information systems, integrated data management for specific applications and data analysis systems. They also ensure the use of standardized and uniform procedures for information handling.

Project Objectives. All projects aim at the strengthening of information handling skills with special emphasis on building national capabilities in both information and human resources while making optimum use of local resources.

Project Size. The projects are all small involving staff of three to nine persons.

Services Offered. Question and answer services, current awareness, Selected Dissemination of Information (SDI), photocopying and literature searches were the main services offered. Fifty per cent of the projects offered contents pages, interlibrary loans and extension services.

Use of the IDRC Library. Fifty per cent of the project leaders utilized the services of the IDRC Library; the other 50% were not aware of the library services that were available.

Project Duration. Duration was generally 36 months with 10% being only 24 months.

Financial Contribution. IDRC contributions ranged from 72,000 CAD to 346,000 CAD and, in most cases, represented about 1/10 to 1/4 of the annual operating budget of the unit in which the project was located.

Types of Publications. These included bibliographies and accessions lists, catalogs, dictionaries of technical terms in local languages, Thesauri, state-of-the-art reviews, consolidated information packages, bulletins, translations and abstracts.

Equipment. Ninety-five per cent of projects surveyed possessed microcomputers. Most had one, some had two; two had mainframe computers. Other equipment - some funded by IDRC, included plotters, digitizers, laser printers, microfilm/microfiche equipment, video equipment, typewriters and one project reported a CD/ROM player.

Software. The majority of the projects used micro CDS/ISIS. Others included: d/BASE III, Wordstar, Lotus, SYSTAT, FARMAP, FORES SPSS, MINISIS, Macwrite, Pagemaker, Professional Write, Perspective, Microstat, Newsmaker and Storyboard.

Memorandum of Grant Conditions (MGC). Most respondents had copies of the official document - the MGC - and the Project Summary. One project manager indicated that he had made the documents available to his accounting and legal departments and to top management.

Project Information. Most of the project managers obtained the information they needed to launch their projects quite readily. Some received it from their institutions; some from the IDRC regional and/or Ottawa based program officers, some through the guidelines provided by the regional office and some through regular contact with IDRC program officers.

Project Phase. Most projects were into their first phase. Thirty percent had had previous phases either with IDRC or another donor. In these cases, the present phase sought to build on the achievements of the first or as a follow up to some of the following issues resulting from previous phases: bringing outputs of the project to the attention of target users, applying activities to local needs e.g. industrial and economic development, and ensuring continuity in meeting high regional demands for the services supplied in previous phases.

Association With Other Programs. Thirty percent of the projects were related to other programs or projects within their own organization.

Long Term Objectives. The following long term objectives were seen as important to individual projects:

- **Extending the information activity to a network mode.**

- Linking national nodes with or without the aid of computers.
- Strengthening national nodes.
- Shifting the emphasis of objectives from problem solving to assistance in conceptualizing needs.
- Training courses for users.
- Assessment of the impact of the project.

Communication. Two regional projects reported communication difficulties with the national institutions participating in the network. This situation was attributed in one case to the poor communication infrastructure but in the other case it was attributed to the unsatisfactory participation of the national institutions.

Project Development

All but three Project managers indicated that they had participated in the project development phase. The participation of the IDRC program officer was often important. They helped to draw up the proposal, assist in the preparation of background information and provide input into discussions. It was felt that involvement in project development had helped in the determination of realistic objectives and budgets for programmed activities.

Generally, project managers felt that their involvement in project preparation contributed to a greater understanding of the project. It was at this stage that they developed a strong commitment to the project and its objectives. In one instance where the project manager was not a part of the negotiating team, the project had to be modified after the project manager assumed duties.

Personnel Management. One of the most important problems seemed to be personnel management. Six projects out of 26 reported problems arising from the lack of locally available and qualified personnel or in training personnel. In some cases, the difficulty in hiring staff was attributed to unattractive local salaries.

Project Objectives

Fifty percent of those who responded felt that they would make amendments to project objectives if they were given the opportunity to redefine the project. Reasons included:

- Need for access to foreign language documents
- Project too ambitious
- Aims unrealistic
- Need for identification of national focal points prior to determination of proposed network activities,
- More cautious approach to identification of projected self support-activities
- User training
- Marketing of outputs
- Need for inclusion of user training in the objectives.

Some felt that the realities of the region (communication problems, services, office facilities) were not sufficiently taken into account.

Several project managers stressed that project evaluation should be considered for inclusion in the project during the project development stage. These evaluations should be aimed at an assessment of:

- The extent to which the project had achieved its objectives.
- Whether targeted audiences had benefited from the products and services of the project.

- Whether methodologies adopted were appropriate.
- Whether identified needs were fulfilled by the project.

Project Methodology

Many project managers declared themselves satisfied with the project methodologies but some indicated that there was a need for modification. One major deficiency highlighted by regional networks was the lack of attention initially directed to national focal points. In other cases the methodology had to be modified to meet the requirements of the local language, the demand for increased output and local conditions.

One project suggested the formation of a working group of nationals to provide a support mechanism for the project. Another indicated the need for flexibility in some activities e.g. increased time span for project activities, authority to hire less qualified staff for longer periods in place of more qualified staff and the option of using computerized project management capacity.

Project Activities

Although the methodologies were, for the most part, found to be appropriate, forty per cent of the projects indicated that the project had **not** kept in line with the schedule of activities as indicated in the project document.

Reasons for the delays included:

- Logistical/local/operating problems.
- Late receipt of equipment.
- Lack of appropriate office space.
- Problems experienced in recruiting of staff/consultants.
- Gross underestimation of time for local purchase of equipment.
- Wide discrepancies between local equipment costs and budgetted costs.
- Staff resignation and resultant work pressure on staff.
- Difficulty in estimating the timing of some activities.

Time Extensions and Budget Reallocations

Forty percent of respondents had either asked for time extensions or foresaw that one would be necessary. Reasons for time extensions were:

- Late start of project activities due to problems with recruitment of staff.
- Inability to respect program schedule due to local problems.
- Delay in purchase of equipment.

Reasons for budget reallocations included:

- Transferring the savings on one line item to supplement others.
- Underestimation of salaries.
- Price increases.

Institutional Problems

Ten of the regional projects were working with as many as 13 different institutions. The individual institutional management structures sometimes affected the work of the members of the network. For example, one project, which deals with 13 different countries, reported that substantial effort had to be expended with individual government officers to assure the smooth functioning of the member country institution. Another reported that government decisions often had an effect on project activities. One project reported financial management problems because of late arrival of IDRC funds.

Project Outputs

About half of the project managers reported some delays in the production of the project outputs. Reasons for the delays included:

- Late start-up of the project; Late arrival of computer or other equipment.
- Difficulty in recruiting personnel.
- Staff resignation.
- Underestimation of some tasks.
- Difficulty obtaining articles for journal production.

All of the projects indicated that the outputs were relevant to users' needs and one suggestion was made to include the translation of a publication into another language.

Cost Recovery.

About 20% of the projects are engaged in some cost-recovery activities. In some cases, there is a subscription charge for journals and other publications. Charges are often assigned to cover the cost of photocopies, microfilms or special bibliographies. In one case, the user is charged a basic fee and the rest of the cost is absorbed by the project.

Several of the projects plan cost recovery activities at the end of IDRC assistance. In most cases, it is not expected that this income will cover all expenses.

A few project managers indicated that decisions were made not to charge for information services since the cost was covered by the Government or from revenues or grants from other sources.

Training

With the exception of one project, all projects had a significant training component. In general, the training component was found to be relevant to the project and had assisted in carrying out project activities. One project manager reported that pre-project training made a significant difference to staff perception of computerization. In one case, training was reported as very useful but too short.

A few suggestions were made for further training.

- STI handling techniques such as information analysis and evaluation.
- Numerical data collection.
- Market surveys.
- Pre-testing of information materials.
- Analysis of impact.
- Language training.
- Training in desk-top publishing.
- Technical information on IDRC procedures.

Management Training.

Generally, project managers had no formal management training. Some had managed projects funded by other donor agencies. Others had attended short courses or management seminars.

While most project managers indicated that formal management training may not be necessary they felt that project management should have skills in the following areas:

- The ability to plan and set short and long term objectives.
- The ability to lead and motivate staff.
- The ability to manage people.
- Knowledge of the project objectives and methodology.

- Knowledge about the technical aspects of the project.
- An understanding of the objectives of their institution.
- In the case of regional projects, understanding about the region.
- Some knowledge about financial administration.

Most of the project managers felt that qualifications in the subject specialty was the most important skill required. Many suggested training in the information sciences was essential. Only two felt that management training was desirable and three project managers felt that training in communication was important.

Users /Beneficiaries

Feedback.

Most project managers reported that feedback indicated that the services offered by the project were very useful. Among the few qualified responses was a general indication that the projects provided as one project manager put it: *"the necessary materials towards the solution if not the solution itself"*. However one project manager indicated that although user feedback was positive it was not possible to know the extent to which needs are met unless an in-depth evaluation is done.

Most of the regional projects cited national participating institutions as the immediate beneficiaries of the project. A few reported the immediate beneficiary as the researcher/scientist.

For national projects, the beneficiaries were identified as researchers, scientists, extension workers, students, and farmers. One project mentioned the difficulty in determining the immediate as opposed to ultimate beneficiary. For example outputs of the project might be directed to an institution which would in turn render services to another level of user.

Training.

A number of projects mentioned the need for user training. Two reported it to be already included in the project activities.

The favored method of user training was through seminars. Informal training however, was used to familiarize users with tools such as a thesaurus, use of microfiche or modern information processing methods. The necessity of promoting the outputs to institutional administrators and clients was stressed by some projects.

Long Term Prospects and Sustainability

All project managers who responded to questions about long term prospects and sustainability reported their intention to continue the project activities at the end of IDRC assistance. In most cases, indications were that the activities would continue under core funding of the organization. In other cases, they would be supported with the assistance of other donors. Many of the project managers who are administering the first phase of their projects intended to submit a request for assistance for further phases to IDRC.

Conclusion

Several of the papers on which this synthesis was based were not very explicit. It was, therefore, difficult to determine whether points mentioned in some papers were applicable to other situations. However, an attempt was made to incorporate all major comments in order to bring them to the attention of project managers and to facilitate the discussions.

An attempt was made to categorize comments by region, type of project (national/regional), subject (agriculture, industry) but this analysis produced no significant difference in responses.

It was felt that some of the reports did not accurately reflect the real problems that project managers encountered. However, the problems or concerns reflected in the report represent a cross section of the real situation as observed by Program Officers during project monitoring.

Chapter 4

Project Management Needs: A Survey

In preparation of for the Addis Ababa meeting, the participants were asked to complete the MIM Supervisory and Management Training and Development Needs Survey.

The questionnaire contained 57 items known to be relevant to supervisory and managerial work. Respondents were asked to make two judgements about each item; its importance and the need for training development. In each case a five point scale was used. Instructions to the respondents were included in each questionnaire.

In addition to asking the target group, the Project Managers - about their training and development needs, information was also sought from the Program Officers working at head office in Ottawa, as well as Program Officers working in a Region. The Program Officers, it was assumed, would have a different perspective on the training needs of the target group. It was hoped that they would be able to view the Project Managers from a distance and point out needs and priorities that were obscure to the target group members.

The survey provided information about the target group and the observations of the Program Officers.

As you will notice in Figure 4.1, the Feedback report provides a distribution of responses for each rating of both Importance and Need for Development as well as an average rating for both. Each item is given a score which is determined by multiplying the average Importance rating by the average Need for Development rating. Items with high scores therefore, are both important in the work and in need of training and development. Figure 4.1 presents the items in rank-order from the highest to the lowest score. All items with a score of 12.25 or higher are worthy of attention.

Figure 4.1 lists all 24 items which had a score of 12.25 or higher for the total sample.

The Top Ten Analysis

While the Manitoba Institute of Management's experience suggests that all items scoring 12.25 or higher are worthy of attention, the 80/20 rule suggests that 80% of the pay-off to an organization such as IDRC will come from dealing with 20% of the items. Twenty percent of 57 is 11.4

Fig. 4.1

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MANAGEMENT DEVELOPMENT NEEDS SURVEY

ORGANIZATION I.D.R.C.

ORGANIZATION CATEGORY PUBLIC ADMINISTRATION GROUP TOTAL COMPANY

SCORE		IMPORTANCE								ITEM DESCRIPTION	NEED FOR DEVELOPMENT								
PRIORITY	AVG IMPORTANCE X AVG NEED	NOT AT ALL IMPORTANT	SOME IMPORTANCE	DESIRABLE	VERY IMPORTANT	TOP PRIORITY	TOTAL RESPONSES	AVERAGE	STANDARD DEVIATION	EACH ITEM BELOW DESCRIBES AN AREA OF KNOWLEDGE, SKILL, ABILITY OR ATTITUDE RELEVANT TO SUPERVISORY OR MANAGERIAL WORK	NO NEED	LITTLE NEED	SOME NEED	SUBSTANTIAL NEED EXISTS	URGENT ATTENTION NEEDED	TOTAL RESPONSES	AVERAGE	STANDARD DEVIATION	COMMENTS
1	16.42			3	14	8	25	4.20	.65	49 SET SPECIFIC AND MEASURABLE GOALS			5	15	3	23	3.91	.60	
2	16.38			2	11	11	24	4.38	.65	36 MANAGE THEIR OWN TIME EFFECTIVELY		2	7	9	5	23	3.74	.92	
3	16.07			2	15	8	25	4.24	.60	37 GENERATE IDEAS TO PROBLEM SOLVING	1	1	6	10	6	24	3.79	1.03	
4	15.18		1	1	9	14	25	4.44	.77	39 MEET SCHEDULE AND SPECIFICATIONS		6	5	10	3	24	3.42	1.02	
5	14.98			2	14	9	25	4.28	.62	28 RECRUIT/SELECT SUITABLE PEOPLE		4	8	8	4	24	3.50	.98	
6	14.81			5	16	4	25	3.96	.62	50 GENERATE ALTERNATIVES/MAKE DECISIONS		1	7	12	3	23	3.74	.76	
7	14.60			4	9	12	25	4.32	.75	35 ABLE TO BUILD A WORK TEAM	2	3	6	10	3	24	3.38	1.14	
8	14.24			2	16	7	25	4.20	.58	46 ANALYZE WORK/IDENTIFY PROBLEMS		3	9	10	1	23	3.39	.79	
9	13.82		1	4	13	7	25	4.04	.79	20 DESIGN REWARDING/MOTIVATING WORK		3	10	9	2	24	3.42	.83	
10	13.42		1	6	11	7	25	3.96	.85	51 PLAN A COURSE SHOWING WHO, WHAT, ETC.		4	9	7	3	23	3.39	.95	
11	13.25			6	15	4	25	3.92	.65	44 COMMUNICATE EFFECTIVELY IN WRITING	2	1	10	8	3	24	3.38	1.06	
12	13.14	1		1	8	15	25	4.44	.92	5 KNOW KEY RESULTS/OUTPUTS EXPECTED	3	3	12	4	2	24	2.96	1.09	
13	13.13		2	3	12	8	25	4.04	.89	38 ABLE TO PREPARE BUDGETS, ETC.	2	2	10	8	2	24	3.25	1.04	
14	12.90		1	6	16	2	25	3.76	.67	47 FORECAST WHAT IS LIKELY TO HAPPEN		2	11	8	2	23	3.43	.79	
15	12.67			3	12	10	25	4.28	.68	13 LISTEN TO UNDERSTAND OTHERS	2	5	9	8		24	2.96	.96	
16	12.63				15	10	25	4.40	.51	2 KNOW SPECIFIC GOALS OF OWN AREA	4	5	6	6	2	23	2.87	1.26	
17	12.61			9	14	2	25	3.72	.62	42 MANAGE HIGHLY MOTIVATED PERSONS		3	11	6	3	23	3.39	.90	
18	12.61		4	9	10	2	25	3.40	.87	56 BASIC UNDERSTANDING OF COMPUTERS		2	7	11	4	24	3.71	.86	
19	12.60	2		4	15	4	25	3.76	1.02	54 ABLE TO MAKE ORAL/WRITTEN REPORTS	1	2	10	8	2	23	3.35	.94	
20	12.57		1	4	12	8	25	4.08	.82	14 COACH/COUNSEL OTHERS	1	7	6	9	1	24	3.08	1.02	
21	12.57		1	5	10	9	25	4.08	.87	31 COMMUNICATE WITH DIFFERENT PEOPLE	2	5	8	7	2	24	3.08	1.11	
22	12.56				16	9	25	4.36	.50	1 KNOW OVERALL MISSION OF ORGANIZATION	4	4	8	7	1	24	2.88	1.16	
23	12.41		1	9	10	5	25	3.76	.84	57 ABLE TO READ QUICKLY & SELECTIVELY	2	1	10	8	2	23	3.30	1.02	
24	12.39			6	14	5	25	3.96	.68	24 ASSESS/REVIEW INDIVIDUAL PERFORMANCE	1	4	11	7	1	24	3.13	.90	

Fig. 4.2

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FEED BACK

TOP TEN ITEMS

TAB ONE:

ORGANIZATION: I.D.R.C.

GROUP: TOTAL COMPANY

RANK	DESCRIPTION	ITEM NO	AVERAGE IMPORTANCE		AVERAGE NEED		TOTAL SCORE
1	SET SPECIFIC AND MEASURABLE GOALS	49	4.200	×	3.910	=	16.420
2	MANAGE THEIR OWN TIME EFFECTIVELY	36	4.380	×	3.740	=	16.380
3	GENERATE IDEAS TO PROBLEM SOLVING	37	4.240	×	3.790	=	16.070
4	MEET SCHEDULE AND SPECIFICATIONS	39	4.440	×	3.420	=	15.180
5	RECRUIT/SELECT SUITABLE PERSONS	28	4.280	×	3.500	=	14.980
6	GENERATE ALTERNATIVES/MAKE DECISIONS	50	3.960	×	3.740	=	14.810
7	ABLE TO BUILD A WORK TEAM	35	4.320	×	3.380	=	14.600
8	ANALYZE WORK/IDENTIFY PROBLEMS	46	4.200	×	3.390	=	14.240
9	DESIGN REWARDING/MOTIVATING WORK	20	4.040	×	3.420	=	13.820
10	PLAN A COURSE SHOWING WHO, WHAT, ETC.	51	3.960	×	3.390	=	13.420

GROUP: PROJ. MGR.

RANK	DESCRIPTION	ITEM NO	AVERAGE IMPORTANCE		AVERAGE NEED		TOTAL SCORE
1	GENERATE IDEAS TO PROBLEM SOLVING	37	4.330	×	4.120	=	17.840
2	MANAGE THEIR OWN TIME EFFECTIVELY	36	4.330	×	3.880	=	16.800
3	MEET SCHEDULE AND SPECIFICATIONS	39	4.500	×	3.650	=	16.430
4	SET SPECIFIC AND MEASURABLE GOALS	49	4.110	×	3.940	=	16.190
5	ABLE TO BUILD A WORK TEAM	35	4.440	×	3.590	=	15.940
6	RECRUIT/SELECT SUITABLE PERSONS	28	4.280	×	3.650	=	15.620
7	GENERATE ALTERNATIVES/MAKE DECISIONS	50	4.000	×	3.880	=	15.520
8	ANALYZE WORK/IDENTIFY PROBLEMS	46	4.330	×	3.470	=	15.030
9	DESIGN REWARDING/MOTIVATING WORK	20	4.110	×	3.650	=	15.000
10	ASSESS/REVIEW INDIVIDUAL PERFORMANCE	24	4.110	×	3.410	=	14.020

Fig. 4.2a

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FEED BACK

TOP TEN ITEMS

TAB ONE:

ORGANIZATION I.D.R.C.

GROUP PROG. OFFICERS

RANK	DESCRIPTION	ITEM NO	AVERAGE IMPORTANCE		AVERAGE NEED		TOTAL SCORE
1	SET SPECIFIC AND MEASURABLE GOALS	49	4.430	×	3.830	=	16.970
2	MANAGE THEIR OWN TIME EFFECTIVELY	36	4.500	×	3.330	=	14.990
3	COMMUNICATE EFFECTIVELY IN WRITING	44	4.000	×	3.570	=	14.280
4	RECRUIT/SELECT SUITABLE PERSONS	28	4.290	×	3.140	=	13.470
5	ABLE TO MAKE ORAL/WRITTEN REPORTS	54	4.000	×	3.330	=	13.320
6	KNOW SPECIFIC GOALS OF OWN AREA	2	4.570	×	2.860	=	13.070
7	GENERATE ALTERNATIVES/MAKE DECISIONS	50	3.860	×	3.330	=	12.850
8	DETERMINE/CONDUCT TRAINING ACTIVITIES	26	3.860	×	3.290	=	12.700
9	ABLE TO PREPARE BUDGETS, ETC.	38	4.430	×	2.860	=	12.670
10	KNOW OVERALL MISSION OF ORGANIZATION	1	4.570	×	2.710	=	12.380

GROUP

RANK	DESCRIPTION	ITEM NO	AVERAGE IMPORTANCE		AVERAGE NEED		TOTAL SCORE
				×		=	
				×		=	
				×		=	
				×		=	
				×		=	
				×		=	
				×		=	
				×		=	
				×		=	
				×		=	

but concentration on the top ten is probably a good place to start.

Figure 4.2 illustrates the ten most important training needs. The items are again presented in rank order. When examining this report, it is useful to compare and contrast the top ten items as identified by the total group, the Project Managers and the Program Officers (identified on the printout as Head Office). Differences in scoring and ranking may reveal differing perceptions of the work and performance.

Comparison of the Top Ten

In Figure 4.3 the top ten items are compared for each of the three samples. Section 1 compares the top ten as identified by the Project Managers to the top ten as identified by Program Officers.

Section 2 compares the Top Ten as identified by the sample to the Top Ten chosen by the Project Managers and the Program Officers.

Section 3 compares the Top Ten as selected by the Program Officers with those chosen by the Project Managers.

When these comparisons are done, it can be seen that four items were ranked in the Top Ten by both the Project Managers and the Program Officers. They are as follows:

- The ability to manage own time effectively).
- The ability to set specific and measureable goals.
- The ability to recruit and select suitable staff persons.
- The ability to generate alternatives and make decisions.

Two other items that were ranked in the Top Ten by the Project Managers also received high scores from the Program Officers. They are:

- The ability to meet schedules and design specifications.
- The ability to analyze work and identify problems.

The results of the Top Ten analysis therefore showed that there was substantial agreement among the Project Managers and the Program Officers as to the training and development needs of the Project Managers.

There are 6 items that the Program Officers have identified as important training needs (for the Project Managers) which are not acknowledged by the Project Managers themselves. They are:

- The ability to communicate effectively in writing.
- The ability to make oral and written reports.
- The ability to know specific goals of their own area.
- The ability to determine training needs and conduct training activities.
- The ability to prepare budgets, and
- Knowledge of the overall mission of the organization.

This feedback suggests that the Project Managers have some training and development needs that are affecting the working relationship they have with Program Officers. Although there is a common perception of the development needs of the Project Managers in relation to managing the project at the site, the Project Managers are apparently unaware of some of the training needs that have been observed by the Program Officers.

Fig. 4.3

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FEED BACK

TAB TWO:

COMPARISON OF TOP TEN

ORGANIZATION: I.D.R.C.

COMPARISON GROUP: PROJ. MGR.

RANK FOR COMPARISON GROUP	ITEM DESCRIPTION	ITEM NO	COMPARISON TO: PROJ. OFFICERS		COMPARISON TO:	
			RANK	DIFF	RANK	DIFF
1	GENERATE IDEAS TO PROBLEM SOLVING	37	15	14		
2	MANAGE THEIR OWN TIME EFFECTIVELY	36	2			
3	MEET SCHEDULE AND SPECIFICATIONS	39	11	8		
4	SET SPECIFIC GOALS	49	1	3		
5	ABLE TO BUILD A WORK TEAM	35	18	13		
6	RECRUIT/SELECT SUITABLE PERSONS	28	4	2		
7	GENERATE ALTERNATIVES/MAKE DECISIONS	50	7			
8	ANALYZE WORK/IDENTIFY PROBLEMS	46	12	4		
9	DESIGN REWARDING/MOTIVATING WORK	20	21	12		
10	ASSESS/REVIEW INDIVIDUAL PERFORMANCE	24	46	36		
			AVG DIFF	9	AVG DIFF	5

COMPARISON GROUP: PROJ. OFFICERS

RANK FOR COMPARISON GROUP	ITEM DESCRIPTION	ITEM NO	COMPARISON TO: PROJ. MGR.		COMPARISON TO:	
			RANK	DIFF	RANK	DIFF
1	SET SPECIFIC AND MEASURABLE GOALS	49	4	3		
2	MANAGE THEIR OWN TIME EFFECTIVELY	36	2			
3	COMMUNICATE EFFECTIVELY IN WRITING	44	25	22		
4	RECRUIT/SELECT SUITABLE PERSONS	28	6	2		
5	ABLE TO MAKE ORAL/WRITTEN REPORTS	54	33	28		
6	KNOW SPECIFIC GOALS OF OWN AREA	2	32	26		
7	GENERATE ALTERNATIVES/MAKE DECISIONS	50	7			
8	DETERMINE/CONDUCT TRAINING ACTIVITIES	26	37	29		
9	ABLE TO PREPARE BUDGETS, ETC.	38	21	12		
10	KNOW OVERALL MISSION OF ORGANIZATION	1	30	20		
			AVG DIFF	14	AVG DIFF	5

It is understandable that the Project Managers would give a high priority to their training needs in relation to managing the project at the site. If something goes wrong at the site the Project Manager must deal with the consequences. On the other hand, if something goes wrong in terms of the relationship they have with Head Office, the Program Manager has to deal with the consequences. Therefore, things like communication skills and the ability to prepare oral and written reports are obviously important to the Program Officer but not a high priority to the Project Manager.

Using the Results for Program Design

The results of needs survey were used as a basis for the design of the week long program in Addis Ababa. Priority was given to the Top Ten training needs as identified by the Project Managers. Following that an attempt was made to cover the Top Ten issues as identified by the Program Officers.

The results of the survey have also had a reflection on the design of this manual. Following is a list of the Top Ten training needs with a reference to the section in this manual where they are addressed.

Fig. 4.4 Program Design

Training and Development Need	Chapter Title	Chapter Number
Generate Ideas to Problem Solving	Developing Project Action Plans	10
Manage Their Own Time Effectively	The Project Manager and the Organization	8
Meet and Schedule Specifications.	Developing Project Action Plans	10
	Delivery of Project Outputs	13
Set Specific and Measurable Goals.	Promotion of Project Outputs	14
	IDRC Budget Development and Financial Administration	19
Able to Build an Effective Workteam.	The Leader/Manager	7
	An Introduction to Project Management	5
	The Effective Project Manager	6
Analyze Work and Identify Problems	The Leader/Manager	7
	Related Management Issues	9
	Developing Project Action Plans	10
Design Rewarding and Motivating Work	The Leader/Manager	7
Assess and Review Individual Performance	The Leader/Manager	7
Communicate Effectively in Writing	Project Evaluation	15
	Project Records	16
Able to Make Oral and Written Reports	Project Evaluation	15
	Project Records	16
	The IDRC Grant Document	17
Recruit and Select Suitable Persons	The Leader/Manager	7
	Developing Project Action Plans	10
Know Specific Goals of Own Area	The Effective Project Manager	6
	An Introduction to Project Management	5
	The Project and its Relationship to IDRC	2
Determine Needs and Conduct Training Activities	Training in Information Sciences Projects	21
	Training in Project Management	22
Able to Prepare budgets	Principles of Financial Administration	18
	IDRC Budget Development and Financial Information	19
Know overall mission of Organization	The Science and Technology Information Program (STI)	1
	The Project and Its Relationship with IDRC	2

SECTION III

The Project Manager

Chapter 5

An Introduction to Project Management

What is Project Management?

A project can be defined as a series of activities that are designed to achieve a certain result. A project must have a goal and it must have specific objectives.

A project starts when the goal and objectives are set. It ends successfully when the objectives are met or unsuccessfully when efforts to reach the objectives are abandoned. A project therefore, always has a beginning and an ending and takes place over a specific period of time.

Because money and time are usually limited, a project has to be organized so that it accomplishes a goal and specific objectives within a certain period of time and with a certain amount of money.

In other words, most projects demand that a certain Performance be achieved for a fixed amount of Money and within a fixed period of Time.

The concept can be summarized by the letters P.M.T. (Performance with limited Money and Time).

A Four Phase Problem Solving Process

Our approach to project management is centred around a problem solving method. The problem solving approach is based on four fundamental steps.

1. Analysis

2. Decision-making

3. Decision implementation

4. Decision evaluation

These phases usually flow one after the other when the project is a response to straight-forward problems.

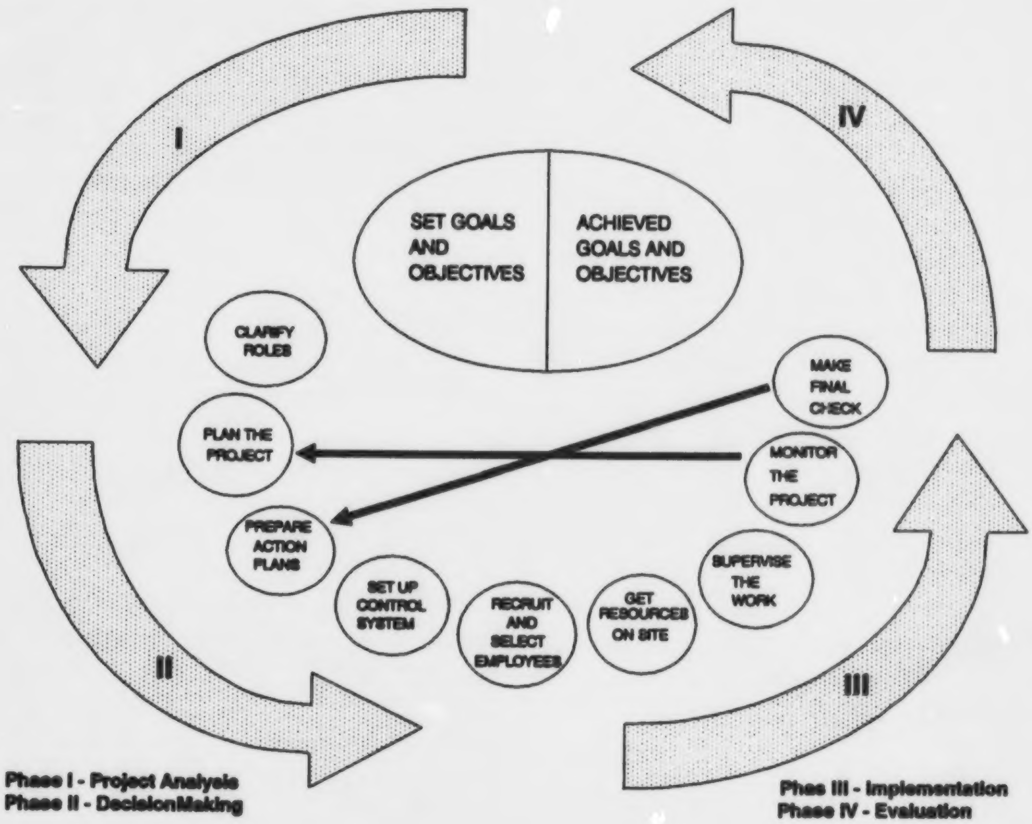
In more complex situations, the same four phases are used but they rarely flow one after the other. There is often recycling between steps; often steps get skipped and sometimes there is activity in all four areas simultaneously.

If we were to diagram a project with each of these four phases represented it would appear as in Fig 5.1. Step one is extremely important and stands out when compared to the other steps. The project does not start until the goals and objectives have been set and does not end until they have been met.

There are several feedback loops (as indicated in the diagram). If each project activity goes according to plan, each step will follow the other in an orderly fashion until the objectives are achieved. But if there are problems such as cost overruns, time delays and personnel problems, they will be identified during the Decision Evaluation phase. When problems are identified, the manager will have to go back to the original plan, re-evaluate it and make the necessary corrections or up-dates, and then continue as before through the project steps.

In a normal project, plans would probably be altered or changed many times. Eventually though, the monitoring systems will judge the work to be satisfactory; the final check and

Fig. 5.1 The Project Management Process


I
IV
SET GOALS AND OBJECTIVES
ACHIEVED GOALS AND OBJECTIVES
CLARIFY ROLES
MAKE FINAL CHECK
PLAN THE PROJECT
MONITOR THE PROJECT
PREPARE ACTION PLANS
SUPERVISE THE WORK
SET UP CONTROL SYSTEM
RECRUIT AND SELECT EMPLOYEES
GET RESOURCES ON SITE
II
III
Phase I - Project Analysis
Phase II - DecisionMaking
Phes III - Implementation
Phase IV - Evaluation

evaluation will be made, and the objective declared accomplished. Only then can the project be said to be completed.

Now lets look at the four phases applied to a simple straight forward problem.

Phase One: Analysis - What is the problem?

To begin the problem must be defined. This simply means describing:

- *Where are you now?*
- *Where do you want to be?*
- *When do you want to be there?*

An example from the development field might relate to agriculture...

WHERE AM I NOW?

"There is no data on farm management available to researchers, Universities and the producers themselves within the region.

WHERE DO I WANT TO BE?

"We want all research stations, Universities and producers to have access to data on farm management."

WHEN?

"By the end of 1992."

Phase Two: Decision Making - What Is The Solution?

This phase has three steps.

1. Generate alternative ways to close the gap between Where we want to be , when we want to be there and where we are now.

2. Evaluate the alternatives.

3. Select the alternatives that are most likely to close the gap and meet whatever conditions or constraints that we are working under.

Referring to the agricultural example.

What are the alternative ways that data on farm management can be made available in the region?

- *Hold training courses for producers throughout the region.*
- *Hold a regional conference for all professionals involved in agriculture research.*
- *Establish a regional Farm Management Centre where a data base on farm management can be established and maintained.*

From these and other alternatives, the regional administration could make a decision and when they decide to implement it, a project is born!

Phase Three: Decision Implementation - What is the best way to implement the solution?)

Project management deals with how to "*manage*" the project to ensure that it takes the client group from "*where they are now to where they want to be when they want to be there.*" This involves three major activities...

1. **Planning Activities:** All tasks to be performed are listed and analyzed in terms of who will perform them, when they will be performed, and how they will be carried out. Planning also involves estimating the amount of money needed (budgeting), the amount of time required (scheduling), the sequence and flow of the project activities (work flow planning), the timing of cash inputs and outputs (cash flow

planning), the number and type of people required and all other resource requirements.

2. **Doing:** Tasks are performed and resources consumed according to the plans developed during the planning phase.

3. **Controlling Activities:** Checks are made to see if what is actually happening conforms to the plan and, if not, proper adjustments are made.

Controlling activities have three important elements:

a. A target or standard (these are the project plans)

b. A means of comparing actual performance against the plan. Therefore there must be a measurement or reporting system set up, and

c. A possibility for corrective actions to be taken if the actual results do not compare favorably with the plan.

In other words, a control system must have a feedback loop built into it. The manager must then have the flexibility to respond to the feedback coming from the monitoring, observing and measuring activities and to change the project plan as required.

If the project involves only a few tasks, it may not be worthwhile to commit plans to paper. On the other hand, if the project involves many tasks it becomes very difficult to manage the project without a written plan and a rigid control process.

Phase Four: Evaluation - Did the solution resolve the problem?

The evaluation phase is designed to answer the question "*Are we now where we wanted to be?*" In seeking the answer to this question a good evaluation process may also provide answers to other questions such as:...

- *If we are not where we wanted to be, where are we?*
- *How much did it cost to get where we are?*
- *Did we complete the implementation on time?*
- *What do we do next?*
- *What did we learn?*
- *If we are where we wanted to be, do we still want to be there.*

Going back to the agriculture example where the objective was to make farm management data available throughout the region - suppose that at the end of the first year there was still no progress in establishing a regional farm management centre. How would the regional planners deal with some of these evaluation questions?

Attached are several worksheets that can be applied to the four step project management process.

Worksheet Number 1: Phase One - Analysis

The first part of the Analysis Worksheet defines problems as "*gaps*" that exist between something you want, need or should have, and what you have now.

The worksheet helps to describe what is wanted (on the right hand side of the page} and what exists now (on the left hand side). Since we generally read from left to right, think of time flowing in the same direction.

On the left is *"now"* and on the right is a realistic estimate of when the project will be finished. Enter that date in the blank space after the word *"when."* The *"gap"* is the time that it takes to go from the present to the desired state. The project will close the gap!

Start With the Goal

It is often easier to start with a description of "what is desired." Starting with what is wanted narrows the focus of the "goal statement." By starting with the desired state, it becomes easier to describe the current situation because the analysis can be limited to those elements that relate to or have an influence on the project goal.

The worksheet provides space for three problem definition statements. The first is a rough draft. The second is more refined, and hopefully more specific, measurable, realistic, and achievable. The third is made only after further analysis on the reverse side of the worksheet.

Whose Problem Is It?

The reverse side of the worksheet focuses on the *"problem ownership"* issue. Whose problem is it? Finding out who owns the problem and how its resolution might impact the lives of those involved may provide new insight into the problem. On the other hand it may not.

Helping and Hindering Forces

The worksheet also focuses on the factors that are working for and against the success of the project.

Without an analysis of the natural forces inherent in the problem situation (some which are helping and others which are hindering movement toward the goal) there is a tendency to think that all that is required to close the gap is to push harder. But when the driving forces are increased, what happens? The restraining forces gain strength as well, and little movement occurs. A wiser strategy is to gain an understanding of the restraining forces and explore what might be done to reduce or remove them. Then, movement toward the goal may be more attainable because the pushing forces that are already there can then be put to work.

Some of questions flowing out of this analysis are as follows:

- If the hindering forces are reduced, are more helping forces needed to achieve movement toward the goal?
- How can the restraining forces be reduced?
- Which forces cannot be reduced? ---- Ever? or just at this time?
- Which helping forces can be increased without increasing the hindering forces?

When the problem has been examined from these perspectives it is possible to write a final definition of the problem. Sometimes more than three drafts are necessary. Sometimes, it comes together after the first attempt.

Don't Let the Worksheet Get In the Way

The worksheets are designed to help manage the project management process. If they do not help, don't use them!

It is not necessary to fill up all the space or answer all the questions on each sheet. Look over the sheet and only answer the questions that you think will help you.

Have fun with the worksheets. Treat them as something that can be played with rather than as a series of questions that have to be answered. Let the worksheets provide some structure to

WORKSHEET #1

Analysis Worksheet

"What is the problem?" — a problem is a gap between "What is" and "What should be" or "What is desired"

EXAMPLE
(from workshop)

EXISTING STATE Date ______

what is now? ______

"THE GAP" how significant is it? ______

is it worth working on? why? ______

GOAL OR DESIRED STATE

What is desired, should be, etc ? when? Target Date ______

YOUR PROJECT — use the space below to write the first, rough draft of the "problem" that your project is meant to resolve

EXISTING STATE Date ______

what is now? ______

"THE GAP" how significant is it? ______

is it worth working on? why? ______

GOAL OR DESIRED STATE

What is desired, should be, etc ? when? Target Date ______

YOUR PROJECT –

use the space below to write the second draft of the "problem" that your project is meant to resolve. Start with "what is desired, should be," etc ? First, be as specific as you can in terms of time, quantities and qualities. Be realistic. This will become the goal or objective so make sure it is achievable with a reasonable amount of effort and resources. When you describe "what is now?", describe it with reference to the same elements that are dealt with in the "what is desired?" statement. Again, be specific, measurable and accurate.

EXISTING STATE Date ______

what is now? ______

"THE GAP" how significant is it? ______

is it worth working on? why? ______

GOAL OR DESIRED STATE

What is desired, should be, etc ? when? Target Date ______

"What is the problem?" — now that you have a definition of the problem, you may want to look at the problem from some other perspectives to gain more understanding of it.

Whose "problem" is it?
List below the specific individuals and/or groups of individuals who will be affected if this "problem" is resolved. Consider both positive and negative impacts. For each individual or group, indicate how the successful resolution of the problem would impact their lives.

	Individual or Group	Impact of project on their lives		Individual or Group	Impact of project on their lives
1			6		
2			7		
3			8		
4			9		
5			10		

Helping forces
(list below any factors that might help ensure that your project succeeds. Indicate how it might help if you can.)

Hindering forces
(list below any factors that might work against the success of your project, indicate how each factor might work against you.)

Your project:
the final problem definition (use the space below to write the final "problem" definition if you have made any revisions as a result of thinking more about the "problem")

EXISTING STATE Date ______

what is now? ______

"THE GAP" — how significant is it? ______

— is it worth working on? why? ______

GOAL OR DESIRED STATE

What is desired, should be, etc ? when? Target Date ______ plan the project. But, within the structure, doodle, scribble, write notes and even ignore some questions. Let the worksheets provided guide you toward a very solid project plan.

More About Goals and Objectives

A project must have a certain goal and specific objectives which must be accomplished within a certain period of time and with a certain amount of money.

The goal statement should describe in a general way the purpose of the project. It results from the problem analysis process and states in specific terms what the desired state will be.

A good goal statement should be a *SMART* goal. *SMART* is an acronym which identifies the criteria of a good goal statement. They are as follows:

Specific - A good goal statement is specific. It describes exactly what will be accomplished.

Measurable - The goal statement should be measurable. It should be written so that at the end of the project one can determine whether or not the goal was achieved.

Action oriented - The statement must be action oriented. It must be written using a verb which describes what is to be done.

Realistic - The statement should be realistic. It should be attainable. It may demand a stretch or a lot of hard work to accomplish but it should be possible to accomplish.

Time Bound - The statement must include a time frame. It must describe what is to happen or what is to be accomplished within a certain period of time.

Very often the manager will divide the goal statement into a number of objectives. Objectives are smaller and more specific than the project goal. Objectives are used to describe what one person in the project must accomplish or what one phase of the project action plan is to achieve. When all the objectives are achieved the project goal is automatically achieved.

Project Activities

Another characteristic of a project is that it is made up of a number of activities. For example, a construction project can be divided into the following activities:

- Choose a site.
- Hire an architect.
- Prepare the site plan.
- Prepare the design plans.

If the project goal is to be successfully reached, these activities must be managed. Without management, the project would flounder and it is very likely the goal would never be achieved.

What is Management?

Whenever the actions of several people must be directed toward a common goal there is a need for management. Management can be formally defined as the process of organizing and employing resources to reach a goal. Generally, management is responsible for the success or failure of a project. It is responsible to see that available resources are used in the best way possible.

What Is Project Management

Project management is the process of organizing and using resources to accomplish the goals and objectives established for the project. It is concerned with using resources efficiently - that is, achieving a certain *Performance* with a fixed and limited amount of *Money* and *Time* (T).

The Functions of Management

A manager has many jobs to do - preparing schedules and budgets, supervising, motivating and disciplining employees, purchasing materials, dealing with contractors and sub-contractors and so on. All of these tasks can be classified into four functions called the functions of management. They are: Planning, Organizing, Directing and Controlling.

In Figure 5.2 these functions have been incorporated into the diagram of the project management process.

The expanded diagram shows how a manager must plan, organize, direct and control resources to proceed through the four phases toward the objectives.

Because the diagram depicts a process that has a beginning and an ending, it illustrates a unique aspect to the project manager's job.

Most managers plan, organize, direct and control in order to keep their institution viable. A project manager, on the other hand, is constantly trying to work himself out of a job. He works to complete a project as soon as possible. When the project is finished, he moves on to a new job, perhaps quite different from the one just completed and probably located at a different site.

Planning

Earlier we saw that planning was a very important part of project management process. Two of the phases in our diagram of the project management process are directly concerned with planning: Step 1: Problem Analysis and Step 2: Decision Making.

Now we want to look at planning as a function of management. Planning is one of the major components of a manager's job. Managers must be future oriented. They must be concerned with questions such as, *"What is to be done?"* and *"How is it to be done?"*

Planning must continue throughout the life span of the project. The manager does not stop planning after he has developed the action plan. Managers must be continually planning because events and situations are constantly changing. This means that plans must be revised, up-dated or even extended to deal with new information or a changed environment.

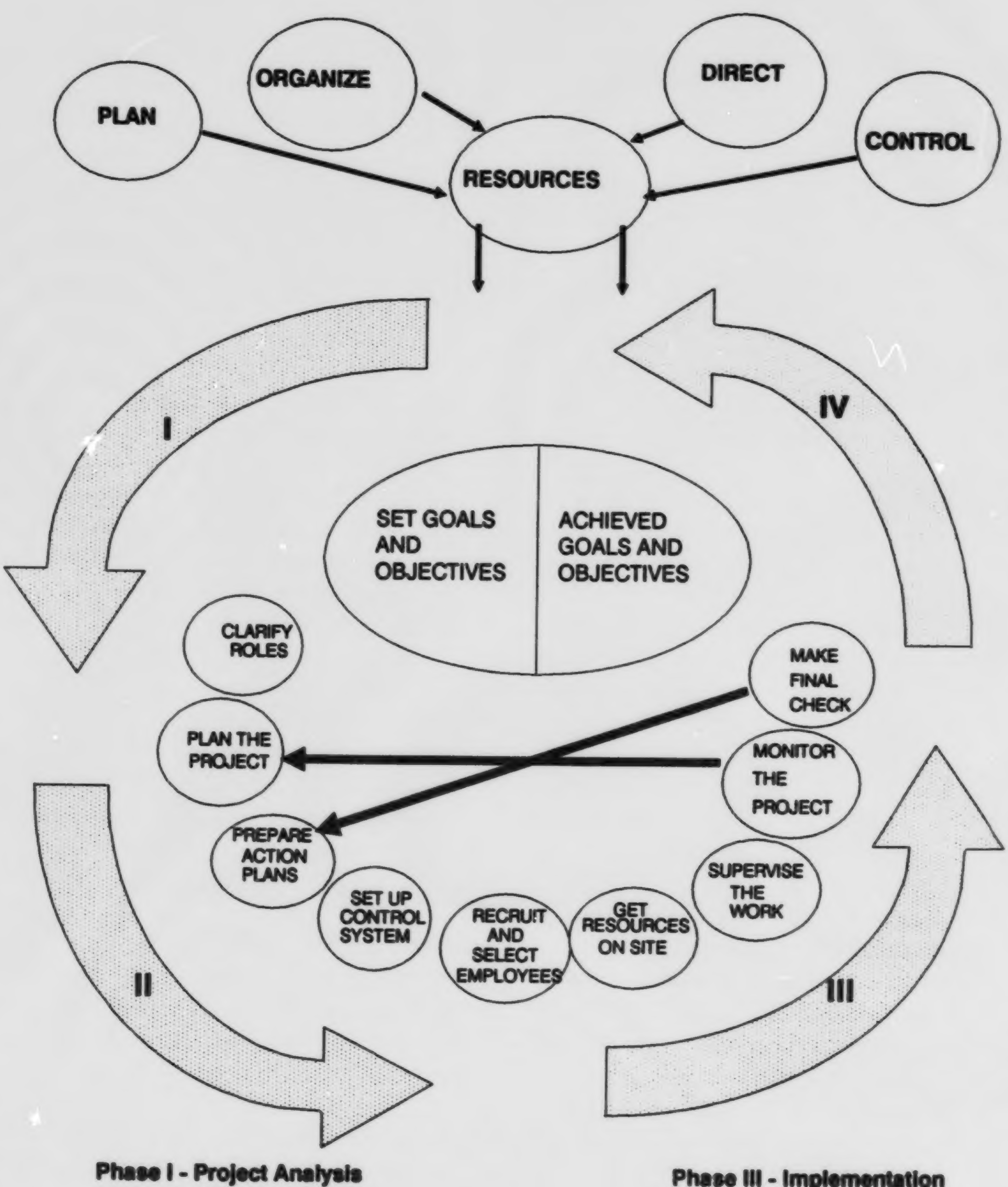
Project managers must do different types of planning. They must plan the use of money (budgeting), the use of time (scheduling), the use of personnel (manpower planning), and the work flow which involves the use of specialized planning techniques such as a network diagram and critical path analysis.

Organizing

To be of use, plans have to be carried out. Organizing means obtaining the necessary resources and co-ordinating these to complete the project.

Organizing is arranging. It is that function of management that brings together the required resources in an orderly manner and establishes

Fig. 5.2 The Project Management Process


ORGANIZE
DIRECT
PLAN
CONTROL
RESOURCES
I
IV
SET GOALS AND OBJECTIVES
ACHIEVED GOALS AND OBJECTIVES
CLARIFY ROLES
MAKE FINAL CHECK
PLAN THE PROJECT
MONITOR THE PROJECT
PREPARE ACTION PLANS
SUPERVISE THE WORK
SET UP CONTROL SYSTEM
RECRUIT AND SELECT EMPLOYEES
GET RESOURCES ON SITE
II
III

Phase I - Project Analysis
Phase II - Decision Making

Phase III - Implementation
Phase IV - Evaluation

work relationships between employees so that they can use these resources to accomplish the goal. Organizing involves looking at the different positions on a project and making arrangement so that all employees can work well together.

A project can quickly grind to a halt if there are no rules of order. It is necessary to know who is the boss, to whom one reports and what one is supposed to do. Organizing is the management function that assures that the project proceeds in an orderly fashion, that the employees know what is expected of them, and that they work together efficiently.

Directing

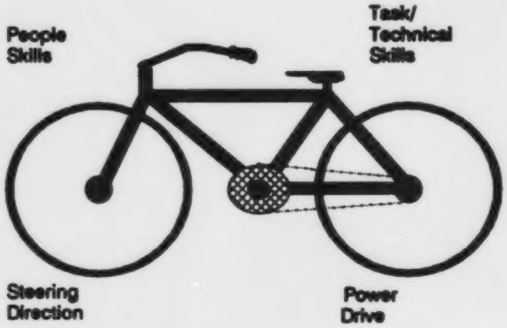
The third function of management has to do with directing employees. Directing is initiating the actual work to be done. It is issuing orders and guidelines and supervising people as they do the work.

Directing can be defined as the job of stimulating the organization; to do the work outlined in the project plan. It is the job of getting all the project staff to work together to achieve objectives.

Since work is done by people, the manager must have good "*people*" skills. He must be able to lead, motivate and communicate, counsel and discipline.

Directing is a complex job since it involves combining the project plans, the project's organizational structure and the employees (with their needs) into an operation that works effectively.

Fig. 5.3 The Bicycle Model (The Ideal Design)



Controlling

Controlling is the fourth management function. It involves measuring the performance of the project to see that the plans are being followed and the objectives are being met. If not, corrective action must be taken by making new plans or improving the organization.

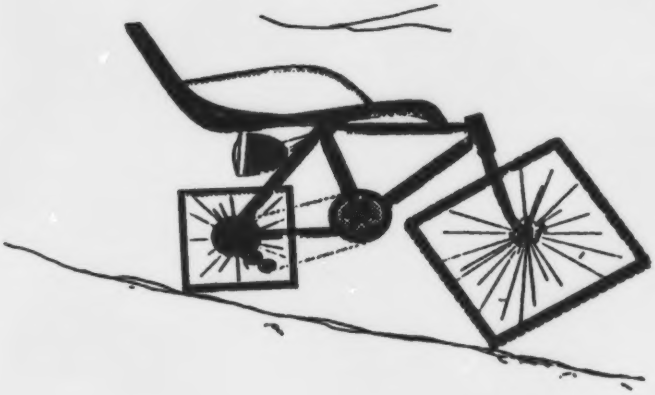
Involved in controlling is policing events and following up on the various activities to ensure that what is planned for is accomplished.

Controlling is done to assure that the project is moving ahead as intended. Without control, the manager would not know how the project is doing or where it is headed.

Control must be exercised over: cost, time, personnel and work flow.

Fig. 5.4 The Bicycle Model (The Flawed Design)

1. Basic frame (often provided by donors).
2. Square wheels to prevent cost over-runs.
3. Rear wheel smaller than front so that progress is always uphill.
4. Rear light to assist with hindsight.
5. Large seat to accommodate the steering committee.
6. Layed back driving position and absence of steering mechanism allowing for hands-off management.



The Project Manager

The project manager must be a planner, an organizer, a director and a controller. He is essentially a professional *"resource manager"* who is responsible to co-ordinate the use of resources so that a specific target is met.

A project manager should be chosen for the job based on his ability to guarantee a certain *Performance* with limited *Money* and *Time*. To do this a project manager needs a combination of technical and people skills.

A bicycle can be used as an analogy to further explain the skills required for project management. (Fig. 5.3)

The back wheel of the bicycle provides the drive and power. It is analogous to the technical skills that the project manager of an IDRC supported project needs to manage an information activity. These skills may include: the ability to organize research materials, to compile bibliographies, answer inquiries on specified topics, to build a data base etc. The information manager requires these skills to provide the drive and power necessary for the project team to move toward the project goal.

The front wheel provides the steering and direction. It is analogous to the "*people*" skills that the project manager needs to steer and direct the project team toward the goal. Front wheel skills include the ability to resolve conflict, communicate effectively with employees, conduct goal setting meetings, involve the project team in planning meetings, etc. Without the front wheel skills the project team may have a lot of expertise which is just not being focused on the goal. The badly designed bicycle as depicted in Fig. 5.4 clearly shows what sort of bicycle would represent a poorly designed project.

The bicycle of the Ideal Design is a useful analogy because an efficient bicycle is one which is balanced - one which has a balanced front and back wheel. The effective project manager is one who demonstrates a balance between front and back wheel skills. It is an analogy we like to think of in terms of a well run IDRC supported project.

The manager who has a great big back wheel and a small front wheel is a person who although an expert in his field, cannot work with others effectively. As a result, his technical knowledge is wasted because he does not have the skills to influence others in a way that allows them to utilize these skills.

The manager who has a great big front wheel and a small back wheel is not effective either. Here is a person who has good leadership and influence skills but has no technical knowledge to apply to the problem at hand. The result is that people see him as nice to have around but not very effective at directing the team toward its objectives.

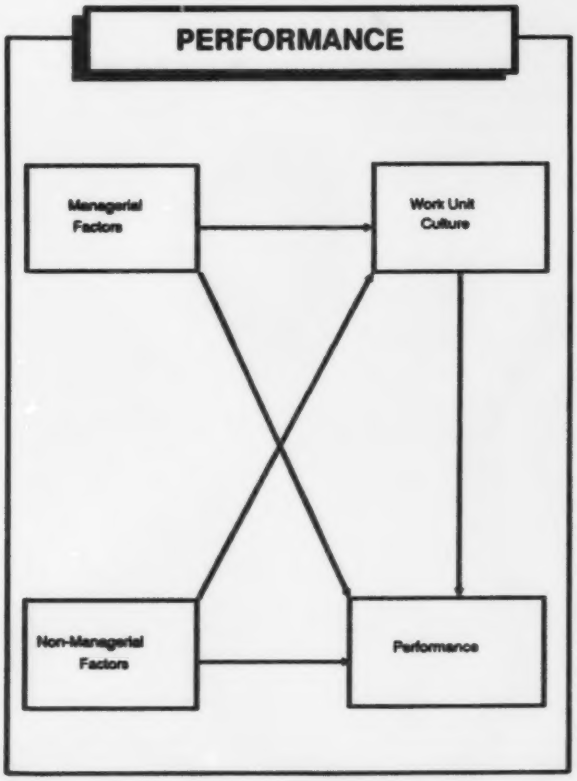
The skilled project manager is one who has the technical knowledge to apply to the project and also the leadership and communication skills to use this knowldege in the context of the project team.

Chapter 6

The Effective Project Manager

The Project Manager's most important consideration is *"What can I do to improve performance?"* As we have seen, this question is the essence of project management - achieving *Performance* with limited resources, namely *Money* and *Time* (PMT).

Fig. 6.1 A Performance Model


PERFORMANCE
Managerial Factors
Work Unit Culture
Non-Managerial Factors
Performance

Recent research suggests that not only does the project manager have an effect on performance - he has a major effect. There are other variables involved such as the skills of the project members, the size of the budget, the accessibility of the work site etc. All have a bearing on performance. But the major difference between an effective project and an ineffective one is the behavior of the project manager.

Figure 6.1 indicates that the bottom line for any project manager is performance. Performance will, of course, be measured differently in each case. It may be the number of items entered onto a data base, the number of entries in a bibliography or the completion date for a new information centre. Somewhat surprisingly, regardless of the project and the results expected, the most important influence on performance is the *"project culture."* Project managers should be concerned about their impact on the project culture because this impact has a direct effect on productivity.

Project culture is a term which defines the environment or the morale of the project team. It refers to what it is like to work on that project with that particular manager and group of co-workers.

Project managers should not limit their roles to being the group leader. Nor should they be content to increase the productivity of the individual group members. Within a project, where the emphasis must be on productivity, management must focus on its impact on the project culture.

The major difference between a project with low productivity and one with higher productivity is the performance of the project manager in terms of the effect on the project culture. This makes the manager, more than any other factor or variable, responsible for the ultimate performance of the project team.

The good news is that managers can be trained to have a positive impact on their project culture even within the constraints imposed by the organizing institution.

The Project Culture

As Fig. 6.2 describes, there are major determinants of project culture.

In a positive project culture, people are obviously highly satisfied with themselves, their job, their co-workers and their managers. A project with a less healthy culture is one where people may be dissatisfied with one or more of these variables.

The second major determinant of project culture is communication. Here we are simply concerned with the amount of communication. In a positive project culture people talk more than they do in a culture that is less positive. What do they talk about? We will see later that they talk about performance issues. Casual conversation about non-performance issues does little to produce a positive project culture. But, the degree to which the project manager directs the project team to talk about performance issues on a hour-by-hour, day-by-day basis is a major determinant of the degree of positiveness of the culture.

Fig. 6.2 Determinants of Project Culture

WORK UNIT CULTURE

I. SATISFACTION LEVELS
  A. SELF SATISFACTION
  B. JOB SATISFACTION
  C. CO-WORKERS SATISFACTION
  D. MANAGEMENT PRACTICES

II. COMMUNICATION NORMS
  A. FREQUENCY & QUALITY OF INTERACTION
  B. COMMUNICATION NORMS ABOUT FOUR SATISFACTION LEVELS

The Culture/Performance Link

As Fig 6.1 suggests, any increase in the positiveness of the project culture will translate into increased performance. The model also suggests that the manager has a great influence on the culture and therefore, on the performance of his team. Regardless of how increased performance is achieved, it will only be sustained when the production levels become a part of the culture.

It is interesting to consider the relative importance of the two variables satisfaction and communication. Consider the chart in Fig. 6.3.

Obviously when there is a lot of communication in project the environment and people are satisfied with themselves, their job, their co-workers and the way they are managed, performance will be high.

However, when there is a lot of communication in spite of the fact that people may be dissatisfied about some aspect of the project, performance will still be relatively high. The members of the team may be dissatisfied but at least they are talking about their dissatisfaction.

Fig. 6.3 Satisfaction vs. Communication

Four Project Cultures

	1	2	3	4
Communication	High	High	Low	Low
Satisfaction	High	Low	High	Low
Performance	*High*	*Moderately Low*	*Moderately Low*	*Low*

This means that problems are in the open and there is potential to solve them.

The third case shows that satisfaction is high and communication is low. This situation is less favorable than where communication is high and satisfaction low. Of the two variables communication is the most important. This third situation could be described as a project made up of a group of "*lone rangers.*" They are very satisfied with their job but they do not share their satisfaction with others. They do not communicate well with other members of the project team. This makes it difficult to learn from each other, to develop the less skilled members of the team and to continue growing and getting better.

When both satisfaction and communication are low the resulting project culture would be quite devastating. Can you imagine working as a member of a project team where people were dissatisfied and were not even talking about their dissatisfaction? No wonder production would be low.

How do effective managers influence culture? What is it that effective managers do in this regard that ineffective managers do not?

Managing Culture - The Five Factors

Effective managers - managers who have a positive effect on the project team, - do a good job managing the five factors.

They are mission, goals, feedback, rewards and support. Each of the factors relates to a basic question the employee has about the project and how he fits into the project team. The questions are as follows:

- Why am I here?
- Where am I going?
- How am I doing?
- What's in it for me?
- Where do I go for help?

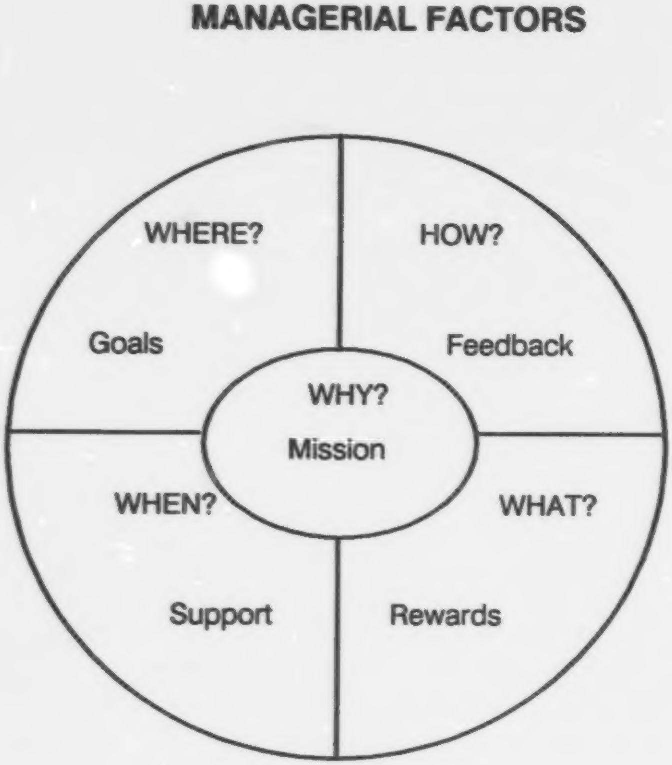
1. Managing Mission

Managing Mission involves answering the employee's "*Why am I here?*" question.

The degree to which the employee identifies with the project is called a sense of mission. This involves having a reason for belonging to the project team - a sense of pride and affiliation with the project.

There is a familiar story about three bricklayers. The first, when asked to describe the work that he did replied, "*I lay bricks.*"

Fig. 6.4 The Management Skills



The second, when asked the same question replied, "*I am building a wall.*"

The third replied, "*I am building a cathedral.*" Needless to say, it was the third bricklayer who had a sense of mission and who was the most productive employee.

This example has direct relevance to the mission of many information projects that IDRC supports. The individual projects may be likened to the bricks. IDRC does not encourage the creating of individual bricks but rather the combination of these individual bricks into an overall structure. These structures are the national, regional and global information systems and networks that make up the broad range of information science projects.

Effective managers use communication and leadership skills to help the project worker achieve a sense of mission by stressing how important each specific job is and how it contributes toward the accomplishment of objectives. Ineffective managers often do not do a good job of this and leave the employee confused and wondering how his particular job is contributing to the success of the project.

If the manager does a good job answering these questions, the effect is a positive contribution to the project culture. If the employee is left with any of his/her questions unanswered, the effect is a negative contribution to the project culture.

Managers working on information projects should be very good at managing mission. They are usually very committed people - committed to making things better for their fellow man by encouraging the mutual sharing of information.

2. Managing Goals

Managing goals involves providing members of the project team with the answer to the "*Where am I going*" question.

It is the project manager who is responsible to see that the project employees clearly understand what is expected of them. In this respect, the manager through the use of good communication and leadership skills, must provide an environment which allows for the tying of individual job performance to the accomplishment of the project goal.

The ineffective manager, on the other hand, leaves the "*where am I going*" question unanswered. The result is so much confusion for the employee that he is unable to focus on what has to be done. Energy is wasted trying to figure out what to do, what is important and so on. The result is a productivity loss.

3. Managing Feedback

When a manager manages feedback, he is providing information about how an employee is progressing toward a goal. Good feedback answers the "*How am I doing?*" question for the project team.

Most managers are weak in this area. They often feel uncomfortable telling the employee "*good news*" about good performance and "*bad news*" about performance that has to be improved. The result - the employee really does not know how he is doing. As a result of this absence of managerial feedback, the employees will invent their own. In most cases this invented feedback will be inaccurate and unrealistic.

Studies show that when the employees of ineffective managers are interviewed about performance, they all feel that they are doing well. They all feel that they are among the top performers even when, in fact, they may be a low performer, a moderate performer or a high performer.

Effective managers, on the other hand, provide feedback in sufficient quantities so as to prevent it from being made up by the employees.

The feedback provided by the effective manager is always relevant. It is always tied to the goal and to the "*where am I going*" question. It is clear, consistent and delivered frequently. Effective managers do not view feedback as punishment for either the manager or the subordinate.

In fact, feedback should be completely nonjudgemental. It should be like a gas gauge in the car. It simply gives feedback about the level of petrol in the tank. It does not make a positive or negative statement about the information it is telling you. A weigh scale works the same way.

Within the project structure, feedback can come from the manager, the employees, the job itself, the appraisal system or the employee's observations and perceptions.

Feedback should be:

- Neutral.
- As soon as possible after performance.
- Frequent.
- Related to goals.
- Accurate.
- Concise.
- Usable.

One effective way of providing feedback is through the use of graphs and charts. They provide a concrete and visual meaning to data. You can see current performance in relation to past performance. It is best when the chart is updated by the employee and not the manager. In this way it becomes a guide to performance rather than a report card.

4. Managing Rewards

Managing rewards involves answering the *"what's in it for me?"* question. It is important to differentiate *"feedback as information"* from *"rewards as reinforcement."* Rewards are the consequences that accrue to the employee for doing good work. Feedback is the information provided to the employee about how he is doing in terms of progressing toward the goal the attainment of which may result in a reward. Feedback, therefore, always precedes rewards.

It is important that the manager of an IDRC supported project find out what they can do to reward good performance within the constraints of the project and the organizing institution.

Rewards that are personal, social, immediate and tied to specific behaviors are much more effective than those that are impersonal, organizational, delayed and not related to specific behaviors.

Effective managers *"tailor"* rewards to the needs of the specific employee. They realize that *"different folks require different strokes"* and that it is the manager's duty to find out what reinforces each team member.

Effective use of rewards allows the employees to make clear distinctions between what happens to them as a high performer as opposed to what happens to them as a marginal or low performer. But, at the same time, employees want to be treated fairly and with equity.

Effective managers also realize that the high performers probably need as much reinforcement to sustain their behaviors as low performers need to change theirs. In a positive work culture, the manager uses leadership style (See Chapter 7) to treat different levels of performance differently. As well, members of the project team begin to reinforce each other and use that reinforcement to contribute to their own positive project environment. The point is that the effective manager, must provide an environment in which people can reinforce each other for doing good work. Such an environment is what we call a positive work culture.

5. Managing Support

When a manager provides support he is addressing the question *"Where do I go for help?"* In a positive work culture employees know that when something goes wrong they can seek and obtain help from other members of the project team. They realize that seeking help is the responsible thing to do if the project goals are to be achieved. In a positive project culture, employees can seek help without negative consequences. Effective managers, through their behavior, minimize the negative consequences that accrue to anybody who seeks help by maintaining a supportive climate.

The Uncontrollable Factors

The five factors discussed above are all controllable - they relate how managers behave or do not behave. There are, however, as illustrated in the model in Fig 6.1, some uncontrollable or non-manageable factors which have some influence on the project culture and therefore, performance. Here we are talking about factors such as the project location, the number of resources, personal concerns of the employees, the state of organization (or disorganization) of the host institution etc.

The research indicates that although these uncontrollables do affect the project culture, their influence in not as strong as the influence of the project manager. Of all the factors that impact the work culture, the project manager's behavior is the most significant.

This means that the difference between an ineffective and effective project can usually be observed in the positiveness of the project culture. It also means that the single most important influence on this difference in the work culture is managerial performance and how effectively or ineffectively managers have answered the five important questions discussed above.

The project will have a culture regardless of managerial actions. The effective project manager, however, builds a positive work culture through his behavior and communication and leadership skills. It is this positive project culture which then yields high productivity.

Answering the Five Questions

The theory is very simple. Provide the employees with information that they want about their job (communication) and they will be more satisfied and contribute in a positive way to the project culture. The result will be increased productivity.

The five questions that we have introduced are so important that if management does not provide the answers, the employees will provide their own. Unfortunately, the answers they come up with are usually wrong. The wrong answers to these basic and important questions will create a lot of confusion, inequity, and distraction among the project team members and will have a negative effect on productivity.

Management By Walking Around

This model indicates that effective project management is an active process. The effective project manager does a lot of walking and talking. Talking about what? Talking about performance. Talking about mission, goals, feedback, rewards and support. Providing answers to the five key questions that every project employee has about themselves and their jobs. We often refer to these activities as the *"Yak Factor."*

Studies indicate that this is exactly what happens. We have coined an expression that describes the typical project managers day. It is characterized by *"managing by walking around."* The effective manager engages in many different conversations each day. Many of these conversations are ad hoc, unorganized, and happen in the hallway, at the project site or as a result of being interrupted. Few of them are planned and often they are short and disjointed. But the effective project manager relates each one of these conversations to performance - to

Fig. 6.5 Team Interaction Rating Form

Team Interaction Rating Form

	Hardly at all				Somewhat				To a High Degree	
1. Members are allowed flexibility in choosing tasks and made to feel competent.	1	2	3	4	5	6	7	8	9	10
2. There is a feeling that the team as a whole could accomplish more than the individuals separately.	1	2	3	4	5	6	7	8	9	10
3. All team members feel responsible for all of the team's actions, not just their own.	1	2	3	4	5	6	7	8	9	10
4. There is a consensus on the goal chosen and a high level of commitment to accomplish the goal.	1	2	3	4	5	6	7	8	9	10
5. There was non-judgemental communication during the team meeting and during the performance between all team members and the leader.	1	2	3	4	5	6	7	8	9	10
6. All members concentrated on the task at hand during the team meeting	1	2	3	4	5	6	7	8	9	10
7. There is an attempt to make the best use of the unique skills of each team member and listen to all of their needs.	1	2	3	4	5	6	7	8	9	10
8. The team has a well-worked out strategy for approaching the problem during the meeting.	1	2	3	4	5	6	7	8	9	10

the five questions and the five managerial factors thus contributing in a positive way to the culture and performance of the project.

Characteristics of the Effective Project Team

Before proceeding with this section, think of your project team and rate its performance using Fig. 6.5..

A high performing project team with a positive work culture and a leader who is committed to managing the five factors is one that is easily recognizable. It has a certain high performance feel or buzz to it. People are working hard but are enjoying their jobs. They all recognize the contribution that they are making to performance; they are committed to making that contribution and they enjoy the interpersonal interactions that are a part of being a team member.

At IDRC and within different institutions where many different project teams and departments are located, it is possible to monitor different work cultures by just *"walking around."* Ever notice that the atmosphere of each department, of each floor or each work unit is different. One can get an indication or *"feel"* of what this culture is like in a very short time.

Simply observing the work cultures around you will give you some clues as to performance levels. Your observation will be subjective but probably fairly accurate. These observations will, as the theory suggests, reflect on the management of the unit. Behind every high performing work unit is a manager who is effective at building this positive work culture. Behind every lower performing work unit is a manager who could be more effective at managing the five factors.

There are eight characteristics of an effective project team. Although they cannot be observed directly, they can be felt (and observed indirectly) by just spending a bit of time in a particular work unit.

1. **Participative Leadership.** The team members are allowed by their leader to have some flexibility in choosing tasks. They are involved to some degree in the design of their own jobs. Giving people the opportunity to match their area of interest with what has to be done contributes to a positive work culture.

As well, participative leadership implies that the leader is active and skilled at providing rewards and support to team members so that they feel competent and have the opportunity to get better at what they do.

2. **Team Focus.** The team members feel that as a whole they can accomplish more than the individuals can separately. The work culture is supportive and focused on helping each other meet goals.

3. **Shared Responsibility.** The team members feel responsible for all the team's actions not just their own specific task.

4. **Aligned on Purpose.** The team members have reached a consensus and have made a committment to a specific goal. Although each may have individual objectives, they realize that accomplishing these objectives is only important in that they help the team move closer to the overall goal.

5. **Open Communication.** There is non-judgemental communication during the project between all team members and between team members and the leader.

The opposite of open communication can be described this way. The leader and/or the team members "*know it all*" or "*want it all*" or "*don't care at all.*"

Know it all - This expression summarizes individual behaviors that can be described as being very judgemental or characterized by an air of superiority. Both represent defensive behaviors which contribute to a negative work environment. The opposite of a "*know it all*" behavior is understanding rather than judgemental and is characterized by equality rather than superiority.

Want it all - This expression summarizes individual behaviors that can be described as self-centred, opinionated, controlling or manipulative. They are all behaviors that can be called selfish and which have a very negative impact on a project team. More productive behaviors include: being open and willing to share rather than being self-centred and opinionated and willing to take a flexible problem solving approach rather than attempting to control or manipulate the actions of others.

Don't Care at all - This expression summarizes attitudes or behaviors that can be described as uninterested or uninvolved. To make a positive contribution to the work culture requires behaviors that can be described as caring, involved and interested.

6. **Task Focus.** All members are able to concentrate on the task at hand. It is the project and the desire to accomplish the project goals that brings everybody together.

7. **Creative Talent .** There is an attempt to make the best use of the unique skills of each team member and to listen to each member's suggestions.

8. **Rapid Response.** The team has a well worked out strategy. Each member understands the strategy, has been involved in some aspect of its design and is committed to following it in order to accomplish the project goal.

How is Your Team Doing?

Refer back to the questionnaire that you completed in Fig 6.5.. Each question refers to one of the eight characteristics of an effective team.

The reference is as follows:

- Question #1 - Participative Leadership
- Question #2 - Team Focus
- Question #3 - Shared Responsibility
- Question #4 - Aligned on Purpose
- Question #5 - Open Communication
- Question #6 - Task Focus
- Question #7 - Creative Talent
- Question #8 - Rapid Response

Take a minute to consider your team. Where are your strengths? Where are your weaknesses? What can be done to improve your scores?

Chapter 7

The Leader/Manager

What is the difference between what effective managers do and what ineffective managers do? In this chapter we will examine this question and try to discover the difference between effective and non-effective leadership behavior.

For years, when people talked about leadership style, they identified two extemes - autocratic and democratic. Autocratic leadership was seen as based on position power and the use of authority, while democratic leadership was associated with personal power and follower participation in problem-solving and decision-making.Tannenbaum and Schmidt, in their classic Harvard Business Review article *"How to Choose a Leadership Pattern"*, argued that these two leadership styles - autocratic and democratic were either/or styles of leadership and therefore fell along a continuum from very authoritarian leader behavior at one end to very democratic leader behavior at the other end.

Further research done by Ken Blanchard and Paul Hersey, two researchers at the Centre for Leadership Studies at Ohio State University, have shown that leadership styles tend to vary from situation to situation and that it is not helpful to think about leadership as a either/or continuum. Their work has provided us with a very practical approach to examining what leaders do and what makes some more effective than others. They call it Situational Leadership.

While developing the theory, extensive observations were made of managers in action. These observations were made on two groups of managers - those who were very effective in their job and those who were very ineffective. The observers, of course, didn't know whether they were observing the effective managers or the ineffective ones.

As they observed managerial behavior they noticed that it could be classified into two broad categories. One they called Directive Behavior and the other Supportive Behavior.

Directive Behavior

Directive behavior was defined as the extent to which a leader engages in one-way communciation; spells out the followers role and tells the follower what to do, where to do it, when to do it, how to do it; and closely supervises performance.

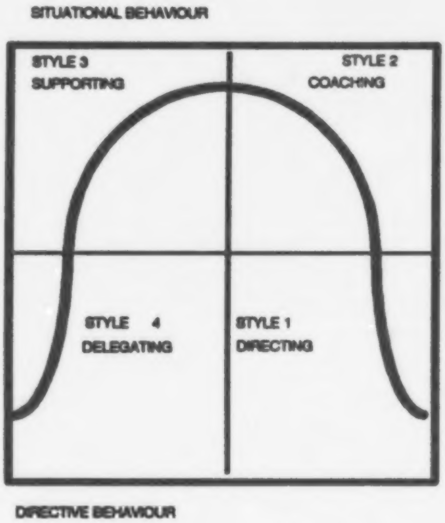
Supportive Behavior

Supportive behavior was defined as the extent to which the leader engaged in two-way communication, listens, provides support and encouragement, facilitates interaction, and involves the follower in decision-making.

Leadership Style

Leadership style can now be defined in terms of the amount of directive and supportive behavior the leader exhibits. The observers identified four distinct leadership styles shown on the grid below.

Fig. 7.1 What the Leader Does



Directive behavior is identified along the horizontal axis and supportive behavior is represented along the vertical axis. The grid was used to plot leadership styles as they were observed among the managers in the study group.

As the results came in, the researchers realized that managerial behavior could effectively be described through the use of four leadership styles.

1. High Directive / Low Supportive

This style could be described as the "*tell*" syle of leadership. Managers whose behavior fit this pattern spent a higher than normal amount of time telling people what to do, when to do it, how to do it, etc. Their style was characterized by the use of very directive behavior and a need to closely supervise the work being done. Problem-solving and decision-making were initiated solely by the manager then solutions and decisions were announced.

2. High Directive / High Supportive

This style could be described as the "*consulting*" style of leadership. Leaders who were observed to be using this style used a higher than average amount of both directive and supportive behaviors. That is they not only told people what to do and how to do it but they were also encouraging and warm toward the follower.

The leader has now increased the amount of two-way communciation and supportive behavior. He attempts to hear the followers' feelings about decisions as well as their ideas and suggestions. While support is increased, control over decision-making remains with the manager.

3. Low Directive / High Supportive

This style of leadership was labelled as the "*participating*" style. It is the opposite of Style 1. In this style the amount of control the leader exercises over problem-solving and decision-making shifts significantly. Style 3 allows the leader and follower to share in problem-solving and decision-making. Two way communication is increased. The manager's role is to actively listen and facilitate problem-solving on the part of the follower. The manager therefore is warm, encouraging, friendly and supportive but offers little in the way of direction.

4. Low Directive / Low Supportive

This style was called the "*delegating style*". Using this style the manager delegates all problem-solving and decision-making to the follower. The follower obtains significant control over how the work is to be done and is basically, allowed to run their own show.

Which Style is Best?

The observations that were made on managerial behaviors yielded information about:

- Which leadership styles were used by the effective managers?
- Which leadership styles were used by the ineffective managers?

The researchers had hypothesized that Style 2 would be the one used by the effective managers most of the time. In other words, they felt that Style was the "*best*" style.

The results were surprising. They found that the effective leaders showed no signs of favoring Style 2. In fact they could not distinguish the behavior of the effective managers from that of the ineffective ones. There were effective managers who used each of the four styles and ineffective managers who used each of the styles as well.

Further study revealed that there were two major factors that seemed to make a difference between the way the effective managers behaved as opposed to the way the ineffective managers behaved.

The first factor was one of high risk or emergency conditions. Whenever there was risk to personnel or property it was obvious that Style 1 worked the best. Style 1 demands directive behavior on the part of the leader. It is apparent that when danger is involved, people need a leader who can take charge.

The second factor was the skill level and motivation of the followers. The lower the level of skill and motivation, the more likely Style 1 and Style 2 would be effective. The higher the level of skill and motivation, the more likely styles 3 or 4 would be effective.

A self-scoring questionnaire called Leader Behavior Analysis II which is available from the Manitoba Institute of Management, is designed to help you discover your leadership style. Its score sheet is also designed to determine your "*flexibility*" and your "*effectiveness.*"

The style flexibility score measures the degree to which you use each one of the four styles with the same frequency. A low flexibility score is obtained when you favor one or two styles for each situation. A higher score is obtained when you show the ability to use each of the four different styles.

The style effectiveness score measures how effective each of your leadership style choices were for each situation. A low score is obtained when you choose a number of fair or poor leader style choices for each of the situations described in the questionnaire. A high score is obtained when you choose mostly good and excellent leader style choices.

Development Level

We mentioned earlier that one of the most important considerations that the leader must make when choosing a leadership style is the skill and motivation of the follower. We call this the development level of the follower.

Development level is always related to two factors: skill and motivation.

Skill Level - Can the Follower do the Work?

Here we are talking about the follower's skill, knowledge and abilities to do a specific task. This can vary from task to task since it is common for a follower to be very skilled in one task and not so skilled in another.

Motivation Level - Will the Worker do the Work?

Here we are concerned with the level of motivation and interest the follower has in a specific task. Again this is task specific and could be high for one part of the job and low for another.

Skill and motivation levels when considered together determine the Development Level of the follower. For convenience a four point scale has been designed to relate development level to leadership style. Figure 7.2 illustrates this scale.

Movement from left to right on the Development scale is indicative of follower growth in both skills and motivation.

Development Level 1 - The Enthusiastic Incompetent

It is assumed that most workers start out on a new task with low skills but with some enthusiasm. Therefore these people are often labelled the enthusiastic incompetents. They don't know enough to do a good job but are highly motivated to try anything. The danger is that they will go ahead and try to do something without adequate supervision and make a serious or costly mistake.

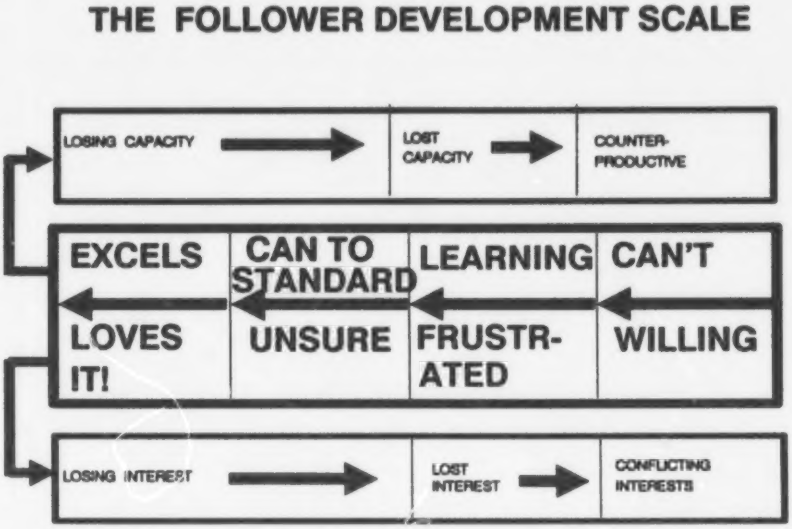
The researchers found that effective leaders used a S1 style of management when dealing with the D1. Thus, they were able to give the follower what he needed: the direction, guidance and know-how to perform the task. The effective leader realized that the D1 can be dangerous to the project and the project team without close supervision.

Development Level 2 - The Disillusioned Learner

Development level 2 is characterized by a drop in motivation. Perhaps the follower finds the task more difficult to master than predicted. Perhaps he is discouraged by the length of time required to master the task. When this happens we get a "*disillusioned learner.*"

The researchers found that the effective leaders when dealing with a D2 used a S2 style of management - a style that was both highly

Fig. 7.2 The Follower Development Scale


THE FOLLOWER DEVELOPMENT SCALE
LOSING CAPACITY
LOST CAPACITY
COUNTER-PRODUCTIVE
EXCELS
CAN TO STANDARD
LEARNING
CAN'T
LOVES IT!
UNSURE
FRUSTR-ATED
WILLING
LOSING INTEREST
LOST INTEREST
CONFLICTING INTERESTS

of management - a style that was both highly directive and highly supportive. They continued to give the follower direction because they had not yet mastered the task and were still concerned about skill level. At the same time they provided a lot of support because the followers needed help to get through their self-doubts.

Development Level 3 - The Reluctant Contributor

The D3 follower is characterized by having the skills to do the job but yet lacking the self-confidence to try it on their own. This state is often the result of too much S2 behavior (high direction and high support) on the part of the leader. Then, when the leader tries to reduce the amount of direction given, the follower may be afraid to proceed on his own.

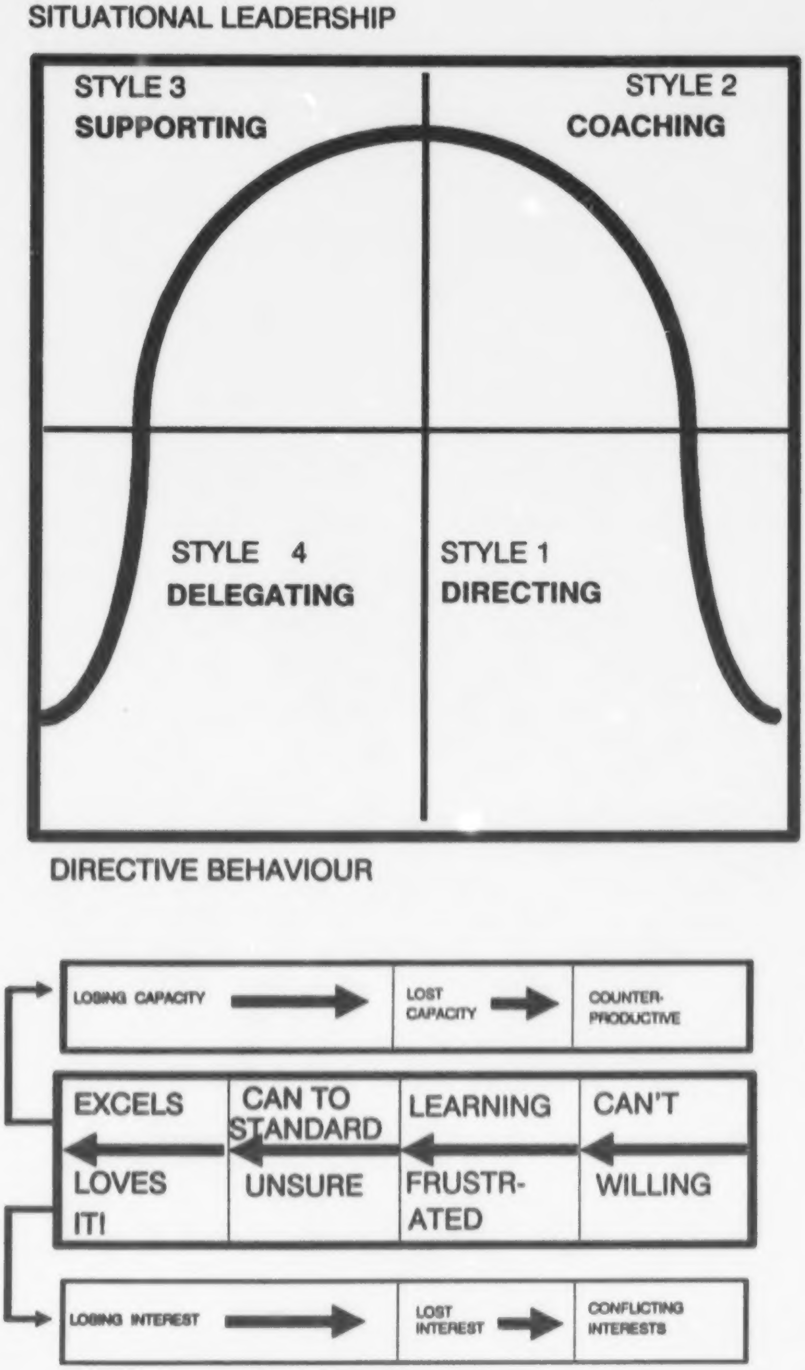
The D3 follower reponded best to the highly supportive but non- directive leader (S3 style). This style gave the follower the support and encouragement he needed while allowing the follower to do the job himself.

Development Level 4 - The Conscious Competent

We call the D4 the conscious competent because he is good at the task and is aware of why he is good. This allows him to critique and evaluate his own performance and through the feedback thus obtained get even better.

A D4 follower is willing, able and delighted to take responsibility. They excel at the task and love to do it. The leaders who were effective at managing this group were those who gave them the responsibility and then gave them the freedom they needed to do the job effectively.

Fig. 7.3 Situational Leadership


SITUATIONAL LEADERSHIP
STYLE 3
SUPPORTING
STYLE 2
COACHING
STYLE 4
DELEGATING
STYLE 1
DIRECTING
DIRECTIVE BEHAVIOUR
LOSING CAPACITY
LOST CAPACITY
COUNTER-PRODUCTIVE
EXCELS
CAN TO STANDARD
LEARNING
CAN'T
LOVES IT!
UNSURE
FRUSTRATED
WILLING
LOSING INTEREST
LOST INTEREST
CONFLICTING INTERESTS

A Developmental Theory

The Situational Theory of leadership is thus a prescriptive theory. It is summarized in the diagram in Figure 7.3. The diagram indicates how leadership style is matched to the follower's developmental level. The theory thus allows the leader to provide the follower with what he needs. If he requires direction, the theory prescribes a directive style (S1 or S2) of leadership. If he requires support, the theory prescribes a supportive style of leadership.

The theory says then, that there is no one best leadership style.

It claims that effective leaders are able to adapt their style to fit the situation.

The theory of Situational Leadership is developmental and positive theory of leadership. It says that it is the manager's job to help their followers progress to a D4 level. Attaining a D4 level is not only good for them but it is also good for the leader because his time is then freed up to manage the other parts of his job. S1 is too time consuming to use all the time. Therefore, the leader's goal should be to help followers increase their willingness and ability to independently accomplish the tasks assigned to them, so that gradually you can begin to use less time-consuming styles (S3 and S4) and still get high quality results.

Managers have two choices: to hire people who are already D4's or to train people to become D4's. Most managers working on projects supported by IDRC have difficulty finding D4's because of the nature of the project environment and the developmental nature of their work. Therefore, it is essential that they accept the training function that is a vital part of their jobs. If they do not they will be continually frustrated with people who are not performing well.

This frustration often forces managers into the most commonly used leadership style which we refer to as *"leave alone and then confront."*

They hire someone to do a certain job; tell them what to do (S1); and they leave them alone (S4) assuming good performance will follow. Unless that person is a real winner (already a D4) that assumption will be false. When the inevitable poor performance follows the frustrated manager moves quickly to a S1 style and demands to know why things are not getting done - the *"confrontation"*

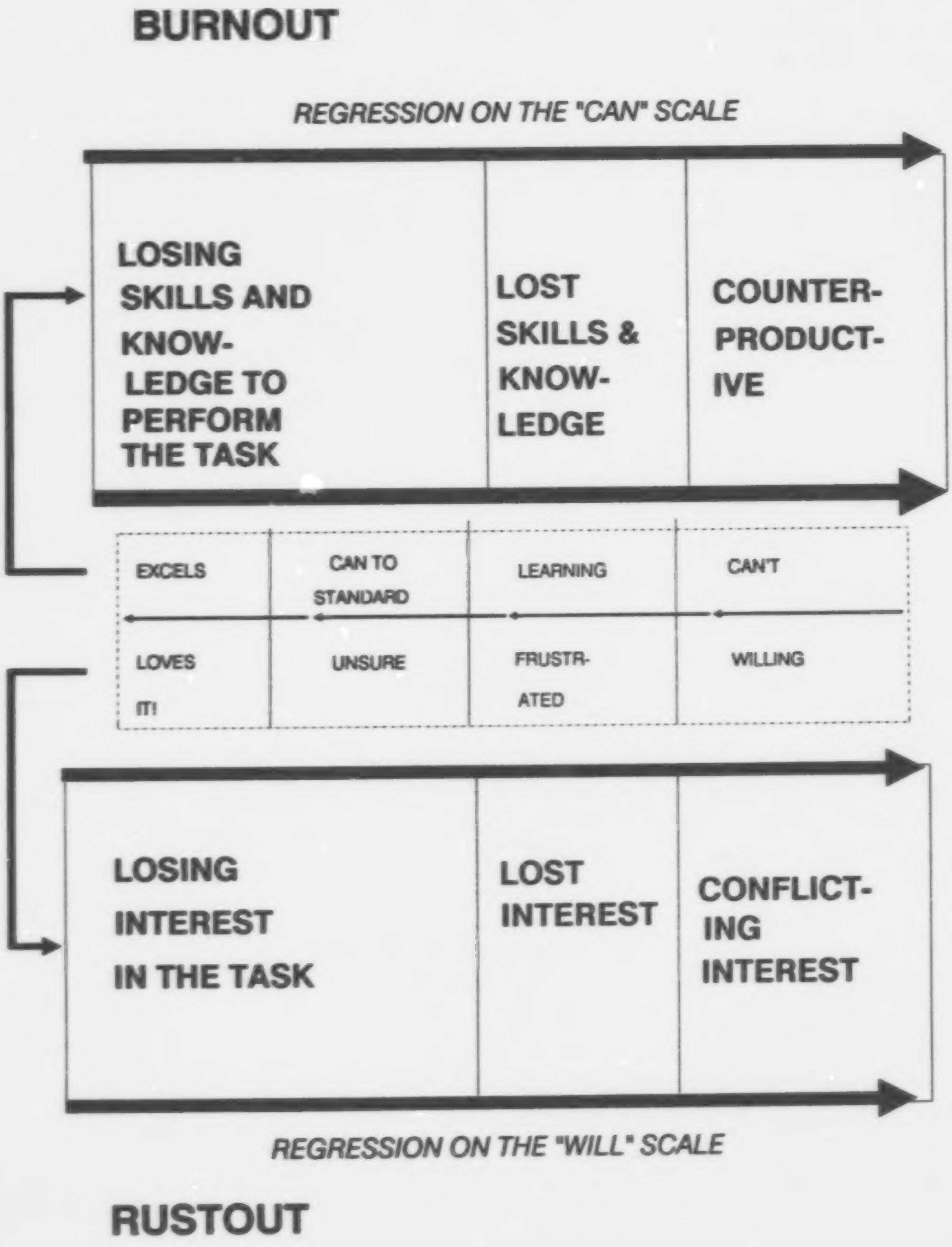
The leader's job can be summarized by the following statement:

"One of the principal tasks of a leader is to lead in such a way that over time every follower becomes a four in every part of their job."

Regression

The leader is usually challenged to develop his followers to become D4's. But the challenge does not stop there. Once there, the followers must be managed in a way that keeps them performing at a high level. Notice that the regression scale makes provision for regression once the follower arrives at development level four. Actually, regression can occur at any level but it is most likely to occur after an employee has passed through the learning curve and is no longer motivated by the acquisition of new skills. The follower's interest wanes or is transferred to some other activity which may, in fact, interfere with performance. For high stress oc-

Fig. 7.4 Regression


BURNOUT
REGRESSION ON THE "CAN" SCALE
LOSING SKILLS AND KNOWLEDGE TO PERFORM THE TASK
LOST SKILLS & KNOWLEDGE
COUNTERPRODUCTIVE
EXCELS
CAN TO STANDARD
LEARNING
CAN'T
LOVES IT!
UNSURE
FRUSTRATED
WILLING
LOSING INTEREST IN THE TASK
LOST INTEREST
CONFLICTING INTEREST
REGRESSION ON THE "WILL" SCALE
RUSTOUT

cupations stress and "*burn-out*" is another cause of regression.

Regression usually occurs on the "*motivation*" scale. It is less likely that regression will occur in the "*skill*" area unless the follower has not practiced the skill or there has been mental or physical deterioration.

Dealing with Regression

When regression occurs, the leader is advised to move back through the four leadership styles starting from S4 and moving to S3. Thus the leader adopts a highly supportive, listening style that permits the follower to talk about his or her loss of interest or skill in a way that puts the onus on the follower to take some corrective action.

If this style change does not produce corrective action and performance declines further, situational leadership prescribes that the leader to drop another style (to Style 2). Now the leader tries to deal with the problem by continuing the supportive behavior but also becoming quite directive in terms of what has to be done to solve the problem. If a Style 2 solution fails then the leader has no alternative but to drop one more style to a Style 1 and take charge of the situation by "*telling*" the follower exactly what has to be done to return to normal.

Training Winners

To avoid the ill effects of the "*leave alone and then confront*" *style of management and to insure productive and satisfied employees, managers should use Situational Leadership to move through the following five steps.*

1. **Tell** the person what you want them to do. You can't manage unless the followers understand exactly what is to be done, what their responsibilities are and what they are accountable for.

2. **Show** the person what you want them to do. Once people know what their responsibilities are, they need to know what good performance looks like.

Note, show and tell are both directive behaviors. Thus, training D1 or D2 starts with a S1 "*telling*" style. Since the follower does not know how to perform the desired task without direction and supervision, decision making and problem-solving are controlled by the leader.

3. **Let them try**. Once the person knows what to do and the expected level of performance, now the manager must take a risk and let them try to perform on their own. When you do that you are cutting back on directive behaviors - you are turning over responsibility for doing the task to the follower. The risk is that the follower might fail so you don't want to turn over too much responsibility too soon. Your job is to make the risk reasonable. Let the person try the new skills in a relatively safe situation.

4.**Observe performance**. When you let a follower try to do something, do not go to a "*delegating*" Style 4 and leave them alone. After you let the person try to do what you want them to do, stick around and observe performance. A basic component of a telling S1 style is close supervision - which means frequently monitoring performance.

5. **Managing the Consequence**. The main reason to closely supervise or monitor the performance is to manage the consequences. A con-

sequence is merely anything that follows behavior. There are three basic consequences.

a. A **positive** consequence or reinforcer - anything that follows performance that tends to increase the probability of that behavior occurring again i.e. praise or a promotion.

b. A **negative** consequence or punisher - anything that follows performance that tends to decrease the probability of that behavior occurring again i.e. a reprimand or demotion.

c. A **neutral** consequence or no response. Unless a person is doing something that is intrinsically valuable, (they would do it regardless of feedback from others) no response to good performance will gradually decrease the frequency of the behavior occuring again.

The consequence that tends to increase the probability that a certain behavior will occur again is a positive consequence. Thus the key to developing people is to catch them doing something right and reinforce them for it. Most managers do the opposite - they try to catch their employees doing something wrong.

You also need to remember that in the beginning it is often enough to catch them doing something approximately right. That way you have the opportunity to reinforce them for improvement or movement toward the goal. Exactly right is made up of a whole series of approximately right steps.

When the manager notices the follower doing something approximately right, he should immediately recognize it with supportive behavior. This reduction in directive and increase in supportive behavior should continue until the follower reaches D2. As the person moves to D3 and D4 the manager should begin to decrease not only directive behavior but supportive behavior as well.

On the other hand, if you continue to direct and closely supervise people for long periods of time, you are sending the message that you do not have confidence in your own people. This underlying message will have a negative effect on the project culture and will affect performance. Thus, the developmental aspect of Situational Leadership and the need to gradually shift from external control of direction and support to internal control is crucial for developing and increasing the performance capacity of people.

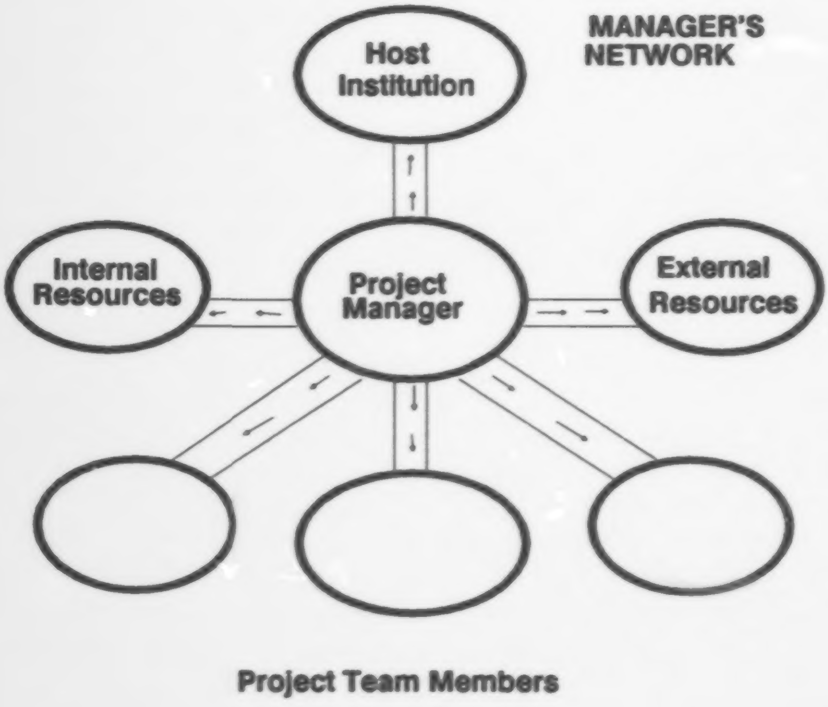
Chapter 8

The Project Manager and the Organization

In Chapter 5 we defined management as planning, organizing, directing and controlling resources in order to accomplish a project objective.

This traditional view of management has managers operating only through 90 degrees (the manager interacting with subordinates) when, in fact, the manager of an IDRC supported project must operate throughout 360 degrees as illustrated in Figure 8.1 below.

Fig. 8.1 Manager's Network


MANAGER'S NETWORK
Host Institution
Internal Resources
Project Manager
External Resources
Project Team Members

Managing Around

The concept of the Management Network helps us to realize that project management is much more than *"managing down."* It also involves managing *"upward"* - managing the relationship you have with your boss; managing *"across"* the organization - managing relationships with peers, suppliers, users, resource people, beneficiaries etc. Managing is not only down, it is up, across and out. In short managing is all around.

The Project Manager and the Network

The project manager is in the middle of the network and project management involves managing 360 degrees around that network. It involves managing not only his subordinates but also the boss, internal resources and external resources.

All the networks throughout the organization are the same except the one at the very top which has no internal peers and the one at the very bottom which has no subordinates.

This means the study of project management must start with the network - the project manager's network and its nucleus - namely the project manager himself. It is the project manager's network which defines his relationship with the host institution external beneficiaries, donors and resources.

The Executive Team

Above the project manager is the executive team one member of which is the boss. This makes it essential that the project manager learn how to manage upward. This process is significantly different than managing downward. The source of influence no longer comes from the *"position"* but must come from skill, knowledge and personality.

The project manager's boss is the most important person on the network. The project manager must keep everyone happy and to do so we advocate that the golden rule of management be followed - "*Those who have the gold make the rules.*"

The key skill for doing this is to prove to your boss that you are competent and highly motivated. If your boss is anxious about you and your abilities he will supervise you very closely. To earn your freedom, you must prove your competence. To do this you should be visible and available to talk whenever required.

Whenever you have a conversation with your boss your objective is to protect your team and enhance their image within the organization. The more positive the image of the project team, the more freedom they will earn to carry on with the project in the way that *"they"* think is best. A project manager who has a less than positive image will probably be forced to manage the project the way the *"boss"* thinks is best. This could be very frustrating especially since the boss will make as many mistakes as the manager would.

The Inside Resource Team

No project manager is an island. Each requires a support team to get the job done. Each manager requires administrative support, functional support, advice, knowledge, and resources.

Outside of the host institution the system is a competitive one. Support, services and other resources that are required can be purchased.

But inside the institution the project manager is forced to work in a monopolistic system. The Inside Resource Team - the accountants, the secretarial pool, personnel department, publication services - these are the people with the power. They have the power to either make your project a success or force it to fail. The project manager is trapped, and must obtain service from these people or not receive service at all.

Not only does the Inside Resource Team have the power, they are usually under-capitalized and under-staffed. Most institutions prefer to put their money toward projects and not toward administrative services.

Because of this situation, the Inside Resource Team is overworked and does not have nearly enough time to handle all the demands that are placed on them. So they give up trying to keep all the project managers happy and instead merely try to get through their day.

In order to manage the demand for their services, which always exceeds supply, the Inside Resource Team develops a queuing system by creating rules and regulations. When the project manager wants something the secretary or accountant or personnel director will say *"put it in writing,"* or *"use the proper form,"* or *"you've got the wrong authorization number."* Rules and regulations thus become a source of frustration for the project manager but a life saver for the Inside Resource Team.

Considering that the Inside Resource Team is usually under-staffed and have a monopoly on the services that they offer, the odds are slim that they will come through when the project manager wants them to.

Once again the project manager requires a new set of management skills to manage *"across"* the organization. He has no direct, formal organizational relationship with these people and he is therefore forced to manage not from position power but by exerting influence.

The Outside Resource Team

The project manager also depends a great deal on resources outside the host institution. He depends on the IDRC program officer, the user/beneficiary, other donors, outside suppliers, experts, government officials, local politicians, as well as international organizations such as UNESCO, WHO, FAO, etc.

Each of these resources has a lot of power because they have something (resources) that the project manager requires to be successful.

Your Make or Break List

The project manager cannot get anything done without the support and co-operation of his subordinates, his boss, the Inside Resource Team and the External Resources.

Imagine for a moment all the people on the project manager's network getting together for a meeting. The purpose of the meeting is to get the manager fired - to make him look bad!

The manager cannot get anything done without their support and when that support is withdrawn the manager would be rendered virtually helpless. When nothing happens on the project or when things start going wrong, who is blamed? The people on the manager's network? No, the person who is blamed is the manager himself.

On the other hand, what if these people wanted to make the manager look like a superstar - could they? They could free up all that red tape, organize all the resources and assure that the project will be a success.

For the project manager then, management is getting things with the active support of others where "*others*" is not just subordinates but all the people on the network.

And who is it that the institution has hired to make sure the project manager gets the support of all the people on his network? The project manager himself. Top management has delegated that responsibility to the manager because he is the best person to handle that responsibility. The manager is the one who interfaces directly with all the people on the network. If there is trouble with some internal peers, the boss is not qualified to handle this situation because his/her network is removed from these people. Since it is the project manager's responsibility to get the active support of everybody in his/her network, he/she cannot expect help from his/her boss. Part of the the project manager's responsibility is to get and hold the active support of the people on his/her network so that he/she is able to accomplish project objectives.

Constructing the Network

First, write down the names of your immediate subordinates and your boss. Do this using Fig. 8.2.

Second, try to identify your Internal Resource Team. Write down only those people who are in a position to make or break you in a key component of your job. The prospective candidate must have regular contact with you in order to qualify.

Third, identify the External Resource Team. Identify individuals not organizations.

This list that you have just completed in Fig. 8.2 consists of the names of the people whose support you must have when the pressure is on.

When you look over the list you may not be that happy. But don't be too hard on yourself because you had nothing to do with picking these people. If you had a choice probably half of them wouldn't be there. In our social life we have the opportunity to choose our friends and construct our own molecule. But, in our business life somebody else picks the network for us and then asks us to manage it.

A project manager who has the support of the members of his network is in a position to be effective. Since the manager's following is above (the boss), below (subordinates), beside (internal and external resource teams), the manager's leadership position is always from the middle of the network. The ineffective leader believes that management begins at the top and is exercised downward. The effective manager knows that managerial leadership begins at the centre of the network and is exercised 360 degrees around it.

Managing the Internal and External Resource Team

The network that you just constructed will help you to manage your time and increase your effectiveness. It will help you to identify the 20% of the people who you interact with who can really make or break you.

Calculated Neglect

Since the project manager is expected to get a lot done in a limited period of time, it is important to practice the skill of calculated neglect. For example, if somebody comes into your office to gossip, you have to decide whether or not to listen. Now that you have constructed your Make or Break List it's an easy decision. If the person is on your list, listen. If not, get on with your work as quickly as possible.

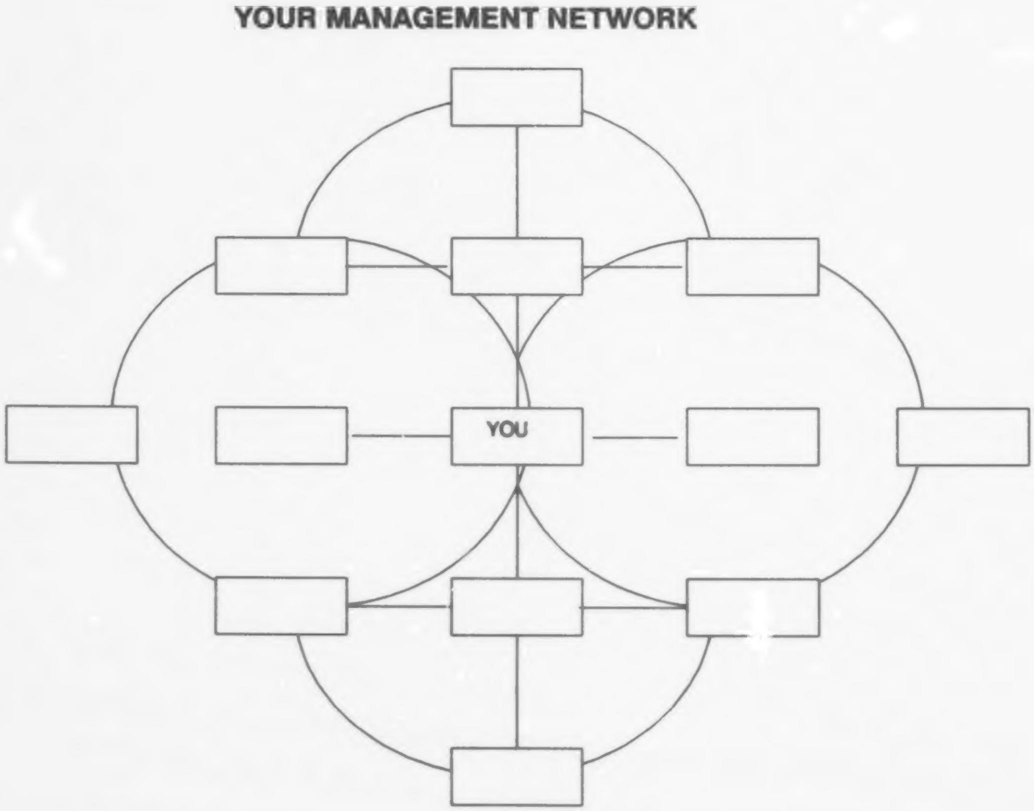
An Insurance Policy

The second principle to apply when managing across the organization is to build an insurance policy. Try to have a number of outstanding credits so that when you need a special favor you have people on your network who owe you something and are therefore motivated to help out. Building an insurance policy is really maintaining an effective exchange relationship. This involves trading knowledge, products, services, time, information, friendship or whatever for the services that you will need to keep your project on track.

Managing Up and Down

The focus of this chapter has been on managing across the organization. The principles of managing up and down the organization are based on the theory of Situational Leadership that are presented in Chapter 7.

Fig. 8.2 Supervisor/Manager's Network



SECTION IV

Project Planning

Chapter 9

Related Management Issues

Funding

IDRC does not see its role as a permanent funder but contributes start-up funds which are usually the most difficult for the institution to find. IDRC is not able to provide on- going operational grants. The grant period is usually from one to three years. It is intended to allow the recipient to plan for integration of the information activity generated by the IDRC project into its institution's core budget. This has happened in many instances but unfortunately, there are some recipients, because of their location or the nature of their work who will always be looking for operational grants to continue extending service.

Academic and research institutions and NGOs have many demands on their budgets and often library and information services do not receive the priority they deserve. It is often difficult to convince decision-makers of the importance of a good information service.

IDRC understands that implementation of a information service takes a very long time - a period of ten years has been suggested as the minimum. That is why many of these projects extend into further phases with each phase representing one more step in the consolidation process.

Project Design

Ideally, a project moves through the following cycle on its way to attaining the status of a self-sustaining locally funded operation.

The chapters that follow in this section present the skills that an effective project manager uses in order to direct the project through this cycle. This brief overview of the project cycle deals primarily with the relationship between the donor and the recipient at each phase. The chapters that follow focus on the planning skills that are used in each phase.

1. Project Analysis Phase
This is the formative stage in which the recipient works out the design and format of the service; conducts the necessary end-user surveys; decides on the training needs; establishes long-term goals and objectives; and tests the methodology. Much of this design work can be accomplished in partnership with the donor in the form of consultancies, study tours, or

workshops. The end product will be a set of recommendations for future action and a clarification of the commitment to longer term funding.

2. Decision Making Phase

This is the start of the main program where the methodology is applied to objective accomplishment. This is a period for developing links to other national and regional infra-structures. This phase involves working to a realistic plan of action.

3. Implementation Phase

The success of this phase is dependent on the quality of planning done in the previous two phases. Hopefully, funding of this phase will be characterized by a substantial and growing local contribution to assure donors of the bona fide intentions the recipient has to assume long term responsibility for the project.

4. Evaluation (Disengagement) Phase

During disengagement, donor funds are confined to completing specific tasks and solving the problems that still remain. The donor's role is to support local attempts to achieve financial independence. Evaluations are completed to assure that what has been learned in the project is recorded so that other projects can benefit in the future.

Long Term Prospects

If disengagement is to be a reality, project managers must consider self-reliance very early in the project. Some considerations should be given to:

- Membership fees as a source of funds.
- Operate, where possible, on a fee for service basis.
- Obtain private funding sources.
- Cost reduction by sharing or co-operating with other institutions or divisions.
- Develop a marketing strategy.
- Develop relationships with other donors and develop multi-donor plans.

Promotion of project outputs is the subject of a separate chapter in this manual.

Making Links

Sharing resources is a key element in an IDRC program. There is large scope for South-South cooperation. Making the right links leads to expanding professional expertise. Project managers should encourage the formation of professional networks and associations. Making links to relevant international, national and regional organizations is a valuable mechanism for enhancing project objectives. Once viewed as random, unstructured and informal, such networking is now viewed as an essential way of developing professional relationships.

Essentially, it means keeping in touch by making yourself known. A well designed brochure, distributed according to a well designed plan will help a lot.

Many projects have links to major international organizations such as FAO, UNIDO, etc. These organizations provide valuable help in areas such as compatibility, mechanization, training etc. and also can assist in giving the project a high profile.

These links are important but IDRC does stress South-South contact so the institutions in the South can help each other build greater institutional capacity. Refer to Chapter 12 for an explanation of how IDRC encourages South-

South co-operation. South co-operation was encouraged at this meeting.

The Future

The time will come when the project has to strike out on its own, to assume its responsibilities for continued operation independent of donor funding. It will be prudent for project managers to plan for that day rather than let it creep up upon them. A well laid plan of action for independence will impress benefactors, but more importantly will inspire self-confidence. You can make it work, if you try.

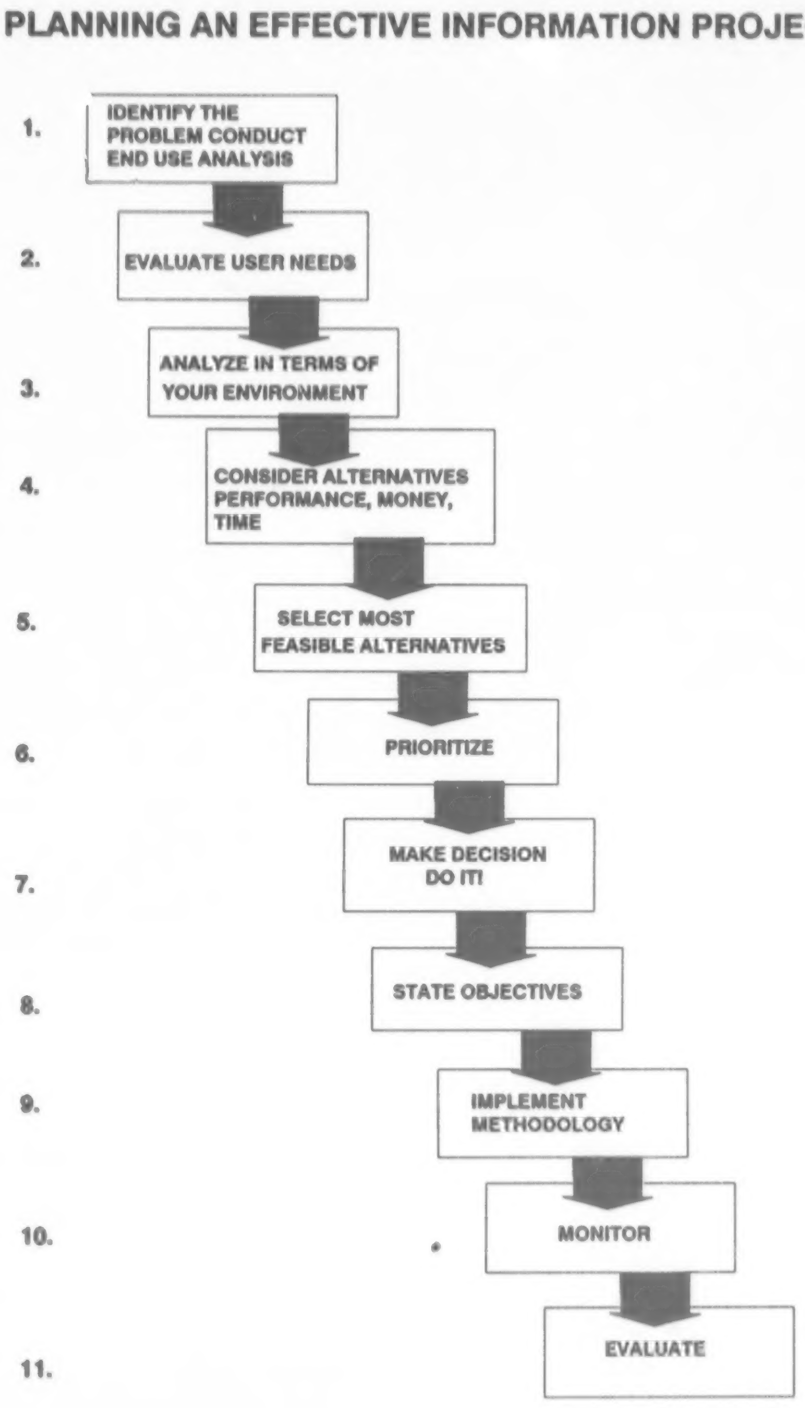
The important point to remember is that operational costs are much cheaper than start-up costs. Make sure your grant agreement really does cover all the start-up needs and avoid having to reallocate budgets where possible to take account of items of equipment necessary to the operation. If, during the grant period the information project has not clearly demonstrated its usefulness to the trustees of the core budget, no amount of additional donor funding will justify the existence of the project. Therefore, it should not to be supported further. We realize, of course, that project managers cannot be expected to anticipate the decisions of their own trustees on future budgets. We also know it is extremely difficult to demonstrate the monetary value of information, i.e. what would be the case if the project did not exist. However, you will have greater chance of securing the future of the project if you:

- Consult.
- Plan to plan.
- Evaluate.
- Advise.

The major links that have to be maintained are the trustees of core funds and other internal *decision-makers*, users who may be a powerful lobby on your behalf partners and *stakeholders*. Partners are those collaborating with the project. The stakeholders are those organizations that have an important bearing on the work.

All linkages at the institutional, national, regional and global levels must be intensively developed and maintained. This is the only efficient way to solve the information needs of developing countries in high priority areas with limited means.

Fig. 9.2 Planning an Effective Information Project


PLANNING AN EFFECTIVE INFORMATION PROJECT
1.
IDENTIFY THE PROBLEM CONDUCT END USE ANALYSIS
2.
EVALUATE USER NEEDS
3.
ANALYZE IN TERMS OF YOUR ENVIRONMENT
4.
CONSIDER ALTERNATIVES PERFORMANCE, MONEY, TIME
5.
SELECT MOST FEASIBLE ALTERNATIVES
6.
PRIORITIZE
7.
MAKE DECISION DO IT!
8.
STATE OBJECTIVES
9.
IMPLEMENT METHODOLOGY
10.
MONITOR
11.
EVALUATE

Chapter 10

Developing Project Action Plans

Chapter 5 introduced a four phase problem solving process. It used Worksheet Number 1 to work through Phase I, Project Analysis. This chapter works through Phase 2, 3 and 4 of the project management process.

The development of a project action plan is particularly important for the successful implementation of projects supported by IDRC. A good action plan will help the project manager keep on schedule and meet objectives, and bring the project to a successful conclusion. Many projects fail because the tasks inherent in the project and methodology are not organized in a systematic way. Therefore this chapter will provide exercises to help perfect the planning process.

Worksheet Number 2: Phase Two - Decision Making

The Decision-Making Worksheet stretches out the problem analysis stage. Its purpose is to slow down the planning phase so that the planning team becomes aware that there are choices to be made because there is always more than one way to proceed toward the project objective (whether we are conscious of the alternatives or not).

When we make choices we are applying criteria that reflect what we value and what we do not value (whether we are conscious of those criteria or not).

The process we use to make choices says a great deal about the kind of organization we really are.

Generate, Evaluate, Decide

The first part of the Worksheet asks you to restate your problem statement.

Once that is done you are directed toward alternative solutions. In the space provided list as many solutions to the problem that you can think of. Don't worry about their value or usefulness. Simply strive for quantity - the more the better. There is room for ten but don't let the form stop you from listing 15, 20, or 50 alternatives!

Now go back over the list of alternatives and use your judgment to pick the one that appears to be the best solution.

Make notes about each alternative under the heading "*Evaluate Alternatives.*" This is a good

WORKSHEET #2

Decision-making Worksheet

"What is the solution?" in this phase we generate several possible solutions, evaluate each, and select the "best".)

Example: (From Workshop)

what is now? Existing State

Date ______

______

______

______

______

______

______

______

______

______

______

Generate Alternatives

list below as many ways as you can, to move from "what is, now" to "what is desired."

1 ______
2 ______
3 ______
4 ______
5 ______
6 ______
7 ______
8 ______
9 ______
10 ______

Evaluate Alternatives

indicate your assessment of each alternative below.

1 ______
2 ______
3 ______
4 ______
5 ______
6 ______
7 ______
8 ______
9 ______
10 ______

Decide mark you choice(s) with an x.

1 ______
2 ______
3 ______
4 ______
5 ______
6 ______
7 ______
8 ______
9 ______
10 ______

Goal or Desired State

what is desired, should be, etc?
when?

Target Date ______

______

______

______

______

______

______

______

______

______

Your project:

what is now? (from phase one) Existing State

Date ______

______

______

______

______

______

______

______

______

______

______

Generate Alternatives

list below as many ways as you can, to move from "what is, now" to,"what is desired."

1 ______
2 ______
3 ______
4 ______
5 ______
6 ______
7 ______
8 ______
9 ______
10 ______
11 ______
12 ______

Evaluate Alternatives

indicate your assessment of each alternative below

1 ______
2 ______
3 ______
4 ______
5 ______
6 ______
7 ______
8 ______
9 ______
10 ______
11 ______
12 ______

Decide mark you choice(s) with an x.

1 ______
2 ______
3 ______
4 ______
5 ______
6 ______
7 ______
8 ______
9 ______
10 ______

Goal or Desired State

what is desired, should be, etc?
when? (from phase one.)

Target Date ______

______

______

______

______

______

______

______

______

______

Weighing Alternatives - a more sophisticated decision making procedure when choices among competing alternatives is difficult. To use this process first eliminate some of the workable and unrealistic options by using the process on the reverse side. What should be left is no more than three competing options.

Example: (From workshop) alternatives	impact on "problem" low/med/high	cost to complete low/med/high	resources utilized external/mixed/local	possible side effects negative ··· positive	learning opportunities for local people low med high	decision

---

Your Project

alternatives	evaluation criterion (A)	evaluation criterion (B)	evaluation criterion (D)	evaluation criterion (D)	evaluation criterion (E)	evaluation criterion (F)	evaluation criterion (G)	etc.	etc.	etc.	decision
alternative one:											
alternative two:											
alternative three:											

How will decision be made? and who will make it? (in some projects, the method of decision making and who makes the decision is as important as what is decided.)

- how will the decision be made?
  - by authority of one person ________ ☐
  - by small, powerful group ________ ☐
  - by majority vote ________ ☐
  - by consensus ________ ☐
  - by unanimus decision ________ ☐
  - by abication ________ ☐
  - by ________ ☐
  - by ________ ☐
  - by ________ ☐
  - by ________ ☐
  - by ________ ☐
  - by ________ ☐
- who will make the decision?
  - a project manager in a local n.g.o. ________ ☐
  - a senior executive in a local n.g.o. ________ ☐
  - a project manager in a foreign n.g.o. ________ ☐
  - a senior executive in a foreign n.g.o. ________ ☐
  - an official in a donor agency ________ ☐
  - a local gov't official ________ ☐
  - leader in the affected community ________ ☐
  - a group rep. those most affected ________ ☐
  - all the persons affected by the project ________ ☐
  - a clique within the group most affected ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐
  - ________ ☐

discipline since it forces you to consider even the wildest idea. Identify both positive and negative attributes of each alternative. Looking for the positive attributes in the ideas that do not appeal to you may open new possibilities.

Now it's decision making time. You are not forced to choose only one of your alternatives. You may choose several of them... or all of them.....or none of them. Or you may choose to combine the positive features of one idea with the positive features of another to produce an entirely new solution!

Making Difficult Decisions

When it is difficult to choose between competing alternatives, assess each option against some pre-established criteria.

Establishing the criteria by which the decision will be made is often a difficult task in itself. Decision makers often have difficulty agreeing as to which criteria are important and which are not.

A list of criteria appear on the worksheet to give you a few examples. They are:

- Impact on the problem.
- Cost to complete.
- Resources utilized.
- Possible side effects.
- Learning opportunities.

How To Decide - Who To Decide

The last section of the worksheet asks you to think about how the decision will be made and who will make it. Think about your own experience and follow the procedure that is most appropriate for your group.

Don't Over-complicate Simple Projects

If the worksheet doesn't help you with your planning, then don't use it. If the worksheet merely outlines the procedures that you follow anyway don't be afraid to throw the form away.

The value of the worksheet is that it takes the project planners through a structured step-by-step process that assures the planners that their decision making process is valid.

However, if what you are already doing is working for you, don't change. An important rule of project management is *"if it isn't broken then don't fix it."*

Worksheet Number 3: Phase Three - Decision Implementation

In simple projects, the energy is usually focused on implementation. This is where you...

- Plan how you are going to implement the solution.
- Do what you planned to do.
- Monitor and control what you are doing to ensure that things are proceeding as planned and that the problem is being resolved.

Doing *"the right things, in the right order, right"* is the key.

Worksheet #3, The Decision Implementation Worksheet, is designed to help you plan a very simple project.

There are eight steps involved. Let's take a look at each one.

1. Prepare a Work Breakdown.

Break the project down into manageable pieces (there is room to identify 20 project activities.)

WORKSHEET #3

	1 WORK BREAKDOWN	2 SEQUENCE	3 ASSIGN CHRONOLOGICAL #'s	4 REWRITE ACTIVITIES IN CHRONOLOGICAL ORDER	5 DETERMINE SCH[illegible]				6 DETERMINE BUDGET		7 ASSIGN RESPONSIBILITIES
					Start Date		End Date		Planned Costs	Actual Costs	Who is responsible to complete this task
	Prepare work break down. Divide the project into logical & manageable action-steps	Sequence the activities contained in the work break down. the first step is assigned the number 100. If the next task happens after this assign a higher number, if earlier, assign a lower number	Assign #1 to the lowest number in column 2, assign a 2 to the next lowest number etc	Now re-write the activities in chronological order	Planned	Actual	Planned	Actual			
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

Project organization: (form some projects you will need to assign responsibility to individuals and/or groups for particular activities. A chart like the one below can help you organize staff.)

who will be involved?	what specific activities steps, tasks will they be responsible for?	when is each to be completed?	what level of performance is expected?	what authority do they have to act?
		start date completion date	unacceptable acceptable outstanding	wait for direction recommend then act act & advise act on own
	1 2 3 4			
	1 2 3 4			
	1 2 3 4			
	1 2 3 4			
	1 2 3 4			
	1 2 3 4			
	1 2 3 4			

There are no rules for preparing a work breakdown (often called a Work Breakdown because you are simply breaking down the project into key activities.) Each activity requires that a certain task be carried out and that certain resources be used.

The guiding principle is to break down the project into logical and manageable units. What is logical and manageable for one person may not be logical and manageable for another. What tends to happen therefore, is that the same project can be broken down in many different ways depending on the experience of the project manager or project planning team.

Take a house building project as an example. A skilled builder may break down the project into a few key activities such as: prepare the foundation, construct floor, construct walls, construct roof etc. Because of his skill and experience he can work with very large activities. On the other hand, a person who had never built a house before would have to work through the project taking a great many very small steps. His work breakdown would be much more detailed. Rather than *"construct the walls"* the inexperienced builder would have to think of the project in terms of: estimate the lumber required, deliver materials to site, layout wall by marking on the floor etc. etc.

It doesn't really matter how detailed your work breakdown is as long as it meets your needs by breaking the project into logical and manageable units.

2. Sequence the Project Activities.

The next step is to sequence the activities in the work breakdown (Column 1).

Take the first activity and in the Sequence Column write the number 100. Ask yourself two questions about this activity: *"What must happen before this activity? and What must happen after this activity?"*

Then proceed to the next element in your work breakdown (column 1) and if it happens before number 100 assign it a number lower than 100. If the task happens after 100, assign it a higher number. Continue this procedure until you have asked the two questions about each activity and assigned a number to each.

3. Assign a Chronological Number to each Project Activity.

Locate the lowest number on the form. Cross it out. Write "*1*" in the Chronological Number column. Locate the next lowest number, and write "*2*" in the Chronological Number column. Continue until all the elements are numbered.

4. Rewrite Activities in Chronological Order.

5. Determine Schedule.

Schedule each activity by identifying a start time, a finish time, and an actual time. This is the basis for a very simple control system. As deviations occur between the estimated times and the actuals, changes may be made and subsequent activities rescheduled.

6. Estimate Costs.

Estimate the amount of money that each activity will cost. Again there is room to compare estimated costs with actuals.

7. Assign Responsibilities.

Assign responsibility for the completion of each activity.

8. Organize the People Involved.

The final part of the worksheet helps you plan projects that involve many different people. Each person who is assigned specific responsibilities needs to know:

- What they are accountable for.
- When they are to start and finish each of their activities.
- What level of performance is expected.
- And how much authority they will have.

Worksheet Number 4: The Project Budget

An essential part of the project implementation plan is the project budget. The Project Budget Worksheet provides a method for creating that budget.

Project budgets start with activities. Each activity consumes time, materials and services which all cost money. Budgeting involves calculating all the costs associated with an activity. These costs are then totaled to produce an overall budget.

Project activities are recorded in column number 1. Standard cost categories are listed across the top of the sheet.

Use the spreadsheet to record the actual as well as the planned expenditures. The columns headed "*actual*" and "*deviation*" will be completed as each activity is completed. This allows you to use the same form for both progress and final reports.

Calculating Costs

On the reverse side of the Project Budget Worksheet are examples of how budgets are prepared for the following expense categories: wages, rentals, travel, living, purchase of equipment and services.

THE PROJECT PLANNING AND CONTROL WORKSHEET

This worksheet is designed to help with the planning and implementation of larger, multiple activity projects.

The worksheet is too large to fit into this manual so it is provided separately. Accompanying the worksheet is a small pad of 1.5 x 2.0 inch paper (*Activity Forms*) with a substance on the back that allows them to be stuck to the worksheet, removed and repositioned many, many times. Pens containing water-soluble ink are also essential.

The Time Line

Along the top of the Project Planning and Control Worksheet, running left to right is the time line. This provides a visual representation of the beginning of the project, the key events along the way, and the targeted completion date. The time line is flexible in that it allows you to choose the units of time that best fit your project.

In the examples (the one year and five year project plans), the major unit of time is months.

This time frame is put together for a one year plan. For longer projects use more than one worksheet or adopt a different time unit.

Activity Forms

Each project activity is represented by a small stick-on form which identifies the following: the activity itself, the responsible person, the costs associated with the activity and the beginning and end dates. Here is one way to fill out an Activity Form.

WORKSHEET #4

PROJECT BUDGET WORKSHEET

Project Activities	Items of Expenditure																					Totals		
	Personnel Costs			Travel and Living			Services & Equipment			Materials			Facilities			Administration Overhead			Contingencies			Total Planned Expenditures	Total Actual Expenditures	Deviations
	Planned	Actual	Deviation	Planned	Actual	Deviation	Planned	Actual	Deviation	Planned	Actual	Deviation	Planned	Actual	Deviation	Planned	Actual	Deviation	Planned	Actual	Deviation			

THE PROJECT BUDGET WORKSHEET (cont'd)

CALCULATING PERSONNEL COSTS	CALCULATING TRAVEL & LIVING COSTS	CALCULATING SERVICES & EQUIPMENT COSTS	CALCULATING MATERIAL & SUPPLY COSTS	CALCULATING FACILITY COSTS	CALCULATING ADMINISTRATIVE OVERHEAD COSTS
E.G. HOURLY LABOUR COSTS # of person hours 275 wages per hour x 10 KS Total costs 2,750 KS NOTE: The above personnel costs apply to those persons hired for the project and do not include the salaries of full-time employees who may participate on the project. YOUR CALCULATIONS:	E.G. CALCULATING TRAVEL COSTS # of persons travelling 4 Cost per fare x 35 KS Total costs 140 KS E.G. CALCULATING LIVING COSTS # of persons travelling 4 # of days away from home 4 Cost per day for hotel 20 KS Total hotel costs 320 KS Cost per day for meals 15 KS Total meal costs 240 KS Total travel & Living costs 700 KS YOUR CALCULATIONS:	TO RENT EQUIPMENT FOR PROJECT E.G. TYPEWRITER RENTAL # of typewriters required 2 # of months required x 3 Cost per month x 30 KS Total cost 180 KS TO RENT SERVICES E.G. # of telexes/month 6 # of months x 12 Average cost per telex x 3 KS Total cost 216 KS TO PURCHASE EQUIPMENT E.G. AUTOMOBILE FOR PROJECT Purchase cost 3,000 KS Interest Charges 300 KS Total cost 3,300 KS TO PURCHASE SERVICES E.G. ACCOUNTING SERVICES TO AUDIT PROJECT # of hours of prof. time 7 Cost per hour 50 KS Total cost 350 KS NOTE: The above equipment and services costs apply to equipment items and services purchased directly for the project. YOUR CALCULATIONS:	TO PURCHASE TEXTBOOKS E.G. # of courses 15 KS # of books/course x 20 Cost per book x 9 KS Total cost 2,700 KS YOUR CALCULATIONS:	TO RENT SPACE FOR THE PROJECT E.G. # of months space req'd 12 amount of space req'd 3,000 sq. ft. cost per square foot/mth .5 Total cost 18,000 KS NOTE: Facility costs apply to space purchased for the project directly and do not include the cost the agency's premises. YOUR CALCULATIONS:	NOTE: Administrative overhead costs are agency costs that are not incurred on the project directly. They include such items as salaries of full time professional and support staff, rent, taxes, insurance costs, interest expense, telephone, utilities, depreciation, etc. To assign administrative overhead costs to a project, follow this two-step procedure: STEP 1: Calculate a burden rate per unit of output. E.G. Total Administrative Overhead $200,000 Total person-days available to agency 1,100 Equals Overhead/person-day $ 182 STEP 2: Allocate Administrative Overhead to Project E.G. # of person-days devoted to project 50 Burden rate x 182 Administrative Overhead $9,100 YOUR CALCULATIONS:

Once completed, these forms are placed on the Project Planning and Control Worksheet in relation to the time line at the top of the worksheet.

Fig. 10.1 Project Activity

ACTIVITY
A

WHO
JACK

COSTS
$12.00

BEGIN
MONDAY

END
TUESDAY

For example, if an activity takes place during the first week in November, you would attach it to the worksheet under the heading "*November*". Some activities, of course, will extend across several time categories. For now place them close to the start date.

The Cost Line

At the bottom of the Planning and Control Worksheet you will find the "*cost line*". This line is designed to help you calculate the cash flow required to maintain the project. For a given time period, look down a column and find all of the activities scheduled to start at that time. Read the "*planned costs*" from the Activity Forms and total them up for the selected time period. Work with totals or sub-totals by category of expenditure. Entries are then made in the appropriate spaces on the Cost Line. These calculations are then transferred to the project budget.

Project Control

As the project activities proceed, it may be necessary to move activities around the worksheet in order to represent what really happened (as opposed to what was planned).

Make entries on the Activity Forms to show actual start and end dates and actual costs. Add up "actual costs" and enter them in the space provided on the Cost Line. These can then form the basis for required progress reports.

As an activity is moved around the worksheet to reflect what has actually taken place, look at how future activities are planned to see if they have to be moved as well. The impact of these changes on the Cost Line can then be calculated and new entries made if necessary.

Playing With The Project Planning And Control Worksheet

This worksheet is a valuable project management tool. But, it has to work for you. You do not work for it! Don't let the form take over the project. Play with it. Try to move activities around the worksheet to see if they could be completed at a better time or in a different sequence.

Show it to others. Encourage the members of the project planning team to experiment by moving activities around. Let them observe the effect of each change on sequencing, completion times and costs.

Direct your attention to the time periods where little or nothing is scheduled. Also look for periods where there is too much activity. Can you reschedule to better utilize people and other resources?

Record local and community events, cycles, etc. on the time line. Look at the illustration on the next page. A major festival, an election date, the visit of an IDRC program officer or representative of an interaction funding agency are all entered. These events will affect the availability of people, materials, support and funds. Now you can move activities around to develop a schedule that avoids problem time periods and takes advantage of slack times.

ADVANCED PROJECT PLANNING METHODS

When dealing with large projects that have a lot of activities, experienced project managers pay a lot of attention to:

- The duration of each activity.
- The connections between activities.

Working with both of these variables on one worksheet is difficult. In fact much of the literature on project management wrestles with this problem. Gantt charts show the duration of activities very well while PERT charts illustrate the interconnection of activities. It is rare to find a procedure that allows a manager to do both. The project manager has to make a choice or construct two different charts.

Our objective is to construct a project plan that is "*visual*" (with the time periods clearly illustrated) which also provides an acceptable degree of accuracy.

Duration Times

What about the activities that have extended duration times? To illustrate the duration of these activities on the Project Planning and Control Worksheet, take some blank Activity Forms and place them next to the original Activity Form. You now have a continuous row of connected forms that start at the start activity start date and end at the activity end date.

An alternative would be to draw an extension of the original Activity Form on the worksheet but this makes it more difficult to make changes and "*play*" with the timing and sequencing of the activities.

Interrelationships Between Activities

Arrows are used to show the interrelationship between activities. *An activity at the beginning of an arrow must be completed before the activity at the end of the arrow.*

This relationship is important for projects that have high costs associated with having materials and manpower at the right place at the right time. Delays could be costly and often mean the difference between success and failure.

When the project is large enough, we recommend that scheduling tools such as PERT and CPM be used. For our purposes, we will borrow from these more advanced techniques such as PERT to make our Project Planning and Control Worksheet a little more sophisticated.

Sequential Activities

Look at the illustrated one year plan. It illustrates project activities that occur over a twelve month period.

Activities that follow one another sequentially are lined up on the same horizontal line. If one activity is delayed, it has an impact on all subsequent activities.

When it is possible for more than one activity to take place in the same time period, the Activity Forms are stacked up with their edges touching one another to show that they are connected in one sequence.

Activity sequences that are independent of one another occupy separate areas of the worksheet. There should be some open space between them.

When there is a connection between an activity in one sequence and an activity in another, use an arrow to connect the sequences. In reality this will not occur very often because connections between sequences are usually obvious and are shown by placing activities in their proper time slots.

Time Estimates

So far we have seen how diagrams are useful for organizing project activities. They illustrate interrelationships between activities and allow the reader to get a comprehensive view of the whole project.

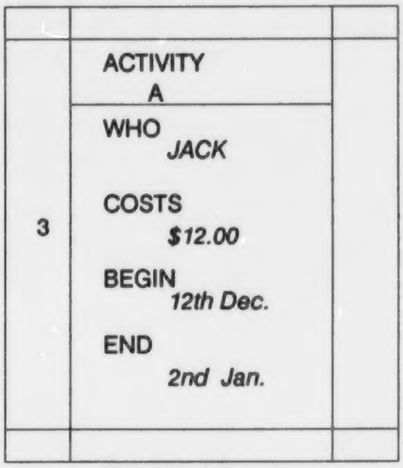
Diagrams also allow us to make decisions about scheduling and resource allocation. If we estimate the amount of time that an activity will take (duration time), we can use these estimates to schedule that activity in a way that makes best use of available resources. Record the duration time estimates right on the Activity Form.

One way to arrive at a duration time estimate is to ask the advice of those who have done similar work in the past.

A More Complex Duration Estimation Process

Another recommended procedure is as follows:

Fig. 10.2 Project Activity with Duration Time



3

ACTIVITY
A

WHO
JACK

COSTS
$12.00

BEGIN
12th Dec.

END
2nd Jan.

Estimated Duration
Time -- 3 wks

1. Calculate The Following:

* *The Most Optimistic Estimate*

If everything worked out perfectly and no delays occurred, how long would it take?

* *The Most Pessimistic Estimate*

If nothing went right and there were all kinds of problems, how long would it take?

* *The Most Likely Estimate*

If things went along as usual, how long would it take?

2. Take each of these estimates and weight them according to the likelihood that they will occur.

For example, plug them into a formula that is heavily weighted toward *"the most likely estimate"*, as follows:

(4 Times The "most Likely") + (the "most Optimistic) + (the "most Pessimistic") Divided By 6.

To illustrate: Suppose a Project Manager came up with the following time estimates for an important project activity: the most pessimistic estimate: 6 days; the most optimistic: 1 day; the most likely: 2 days. Plugging these estimates into the formula produces the most realistic estimate of 2.5 days.

This is a complex way of estimating and may not be necessary unless you are working to very tight deadlines on a project that is dependent on expensive labour and materials.

However, the discipline of estimating and then checking these estimates against what really happens is a very valuable exercise no matter how complex or simple the project. Even the best planned projects rarely turn out according to plan but if there are no plans at all there is no foundation from which to learn and improve.

Scheduling The Work

So far we have placed activities on the Project Planning and Control Worksheet in a way that illustrates how the activity will take place.

We will now look at a way of making these *"when"* decisions that is more precise and efficient.

Ignore, for the moment, the time line. Focus on getting the activities in their proper sequence within each major activity cluster. Concentrate as well on showing activities that connect one cluster to another. Use arrows to show that one activity must be completed before another starts.

Look at the Project Network Diagram entitled the Critical Path on the next page. Note that two *"dummy"* activities have been added. One is labeled *"Start"* and the other is labeled *"Finish"*. These *"dummy"* activities are important if the objective is to create a precise schedule.

Other than *"Start"* and *"Finish"*, the example contains only nine activities. (In reality, if there were only nine activities to plan, a diagram would probably not be necessary.)

Look at activities A, B, and C. They all can be done at the same time so they are placed in a vertical column.

The arrow connecting A with D shows that A must be completed before D can start. Activity E cannot begin before both A and B are completed. You can figure out the other dependencies yourself.

Earliest Start And Earliest Finish Times

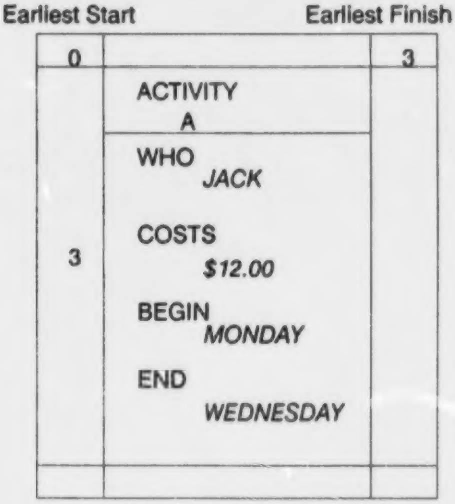
Once the network of activities has been completed, go through the diagram and record the earliest start time and the earliest finish time on each Activity Form. Record the *"earliest start time"* in the upper Left hand corner of the form and the *"earliest finish time"* in the upper Right as illustrated below.

Referring again to *"A Project Network Diagram"* these times can be calculated by starting at the first activity and accumulating duration times all the way through the network.

Look at the diagram once again. Activity A's *"earliest start time"* is 0 and since its duration is 3 days, its *"earliest finish time"* is 3.

Since the activity D can't start until A is completed, its "earliest start time" becomes 3 and since its duration is 6, its *"earliest finish time"* is 9.

Fig. 10.3 Project Activity/Earliest Start & Earliest Finish


Earliest Start
Earliest Finish
0
3
ACTIVITY
A
WHO
JACK
COSTS
$12.00
BEGIN
MONDAY
END
WEDNESDAY
3

Latest Start Time And Latest Finish Time

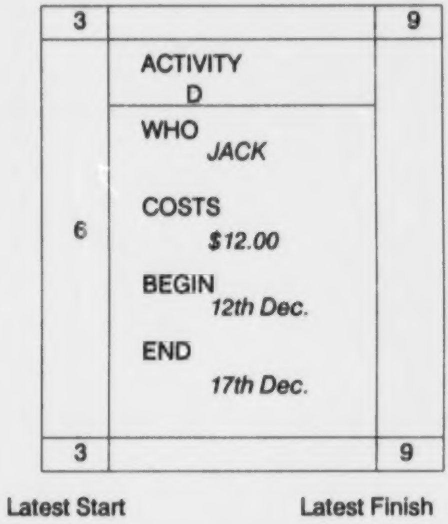
Now work backwards through the network to calculate the *"latest start time"* and the *"latest finish time"* for each activity. Record these on the lower left corner and the lower right corner of the activity sheet as illustrated below.

These are calculated by starting at the end of the project, and working backwards.

The dummy Finish activity should have a *"latest finish time"* that is the same as its "earliest finish time" .

Referring back to the illustration, activities H and I both have the same *"latest finish time"*. The *"latest start time"* is then calculated by subtracting the duration times from the *"latest finish time"*.

Fig. 10.4 Project Activity/Latest Start & Latest Finish Time


3
9
ACTIVITY
D
WHO
JACK
COSTS
$12.00
BEGIN
12th Dec.
END
17th Dec.
6
3
9
Latest Start
Latest Finish

Latest Start Time = Duration Time - Latest Finish Time

Since activity G must be finished before both activity H and I can start, the *"latest finish date"* is determined for activity G by finding the most restrictive *"latest start date"*.

Since H has a latest start date of 10, G must be finished on day 10 at the latest.

The Critical Path

If you have calculated the earliest start and finish times as well as the latest start and finish times for each activity, it should be relatively easy to find the *"critical path"* through the network.

The *"critical path"* is the path through the network that links up those activities whose earlier start and finish times are the same as the latest start and finish times.

In other words, there is no slack time on the critical path. The critical path is the longest route through the network. The activities on the critical path are *"critical"* because of the following important principle:

"The shortest possible time to complete a project is the time it takes to complete the longest route through the project diagram."

For all other non-critical activities, there is some slack time. This means that these activities can be delayed without delaying the completion of other important activities. The amount of time these non-critical activities can be delayed is referred to as their slack time.

In the illustration the critical path is clearly indicated with a heavy line.

The Usefulness Of The Critical Path

It is useful to know the critical path for the following reasons:

1. Time, money or effort spent trying to speed up a project by shortening the duration of non-critical elements is wasted.

Why? - because if a non-critical element is completed faster than planned it has no effect of the duration of the complete project.

2. It may be possible to save money, effort or resources by allowing the non-critical elements to expand to fill the slack time that is available to them.

Why? - because if resources can be saved by using the slack time contained in the non-critical activities there is no effect on the duration of the total project.

3. Resources spent trying to speed up a project by shortening the duration of critical elements will probably pay off.

Why? - because any time spent on a critical activity directly effects the duration of the total project.

"Concentrate efforts and resources on the right activities. It will pay off!"

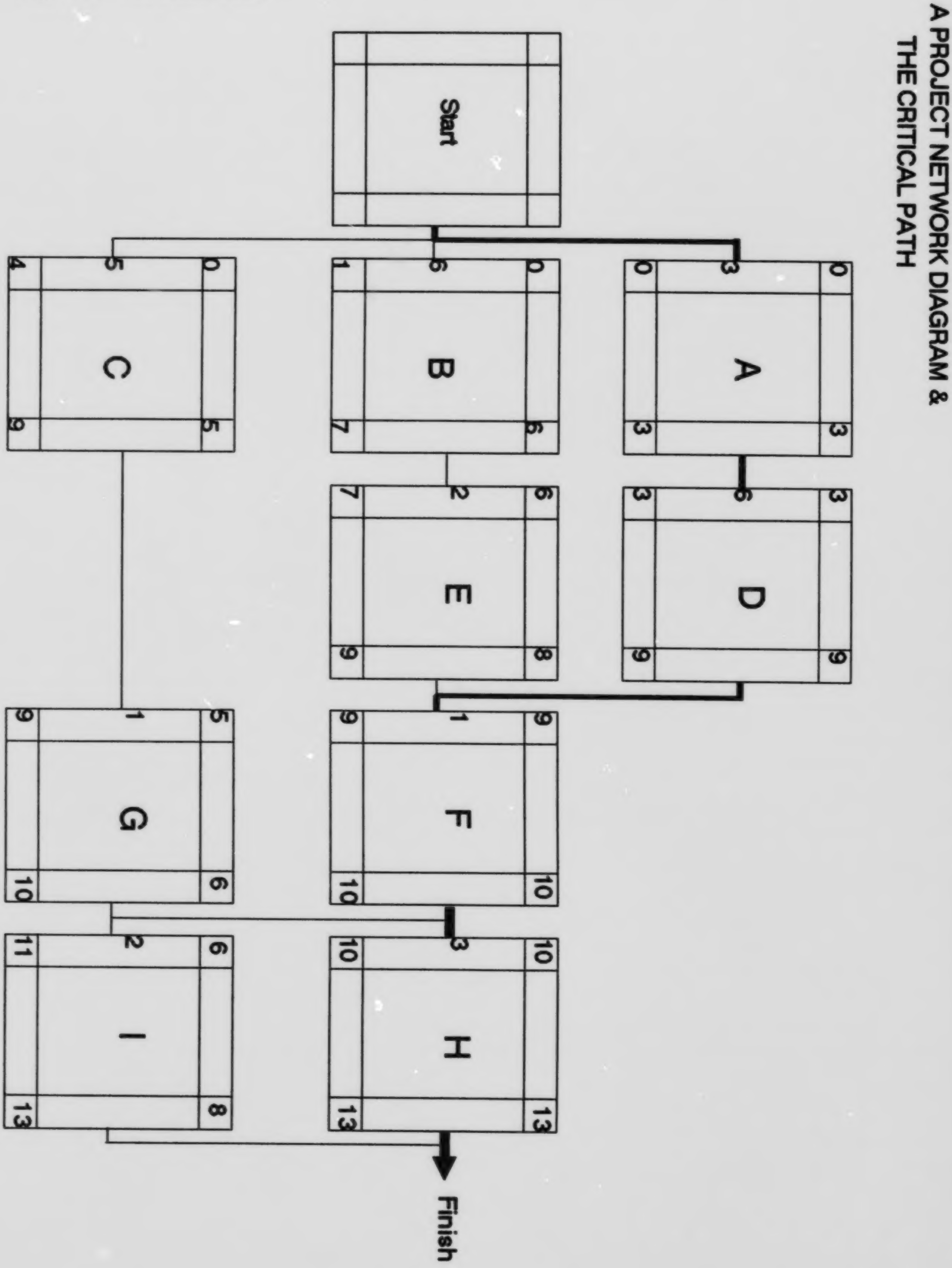
Completing The Schedule

It is now possible to enter activities onto the Project Planning and Control Worksheet with more precision.

Events on the critical path are, in effect, already scheduled! By reading the start and finish times, critical activities can be lined up with the time line very precisely (assuming your time line and your time estimates are written in the same time units).

As before, use blank Activity Forms to extend activities over certain time periods.

Fig. 10.5 Critical Path


A PROJECT NETWORK DIAGRAM &
THE CRITICAL PATH
Start
A
0
3
3
0
0
3
B
0
6
6
1
1
7
C
0
5
5
4
4
9
D
3
6
9
3
0
9
E
6
2
8
7
1
9
F
9
1
10
9
0
10
G
5
1
6
9
4
10
H
10
3
13
10
0
13
I
6
2
8
11
5
13
Finish

Look at the diagram illustrating the critical path. The critical path is formed by activities A,D,F, and H.

The diagram also illustrates the freedom that is now available to schedule activities E,B,G,C, and I. Arrows are still used to show dependencies. Activities not on the critical path can be scheduled anywhere between the *"earliest start date"* and the *"latest finish date"* but, of course, you must pay attention to dependencies and duration. Once a time frame has been selected for one activity, it may limit your choices for others that are dependent upon it.

There is flexibility in scheduling the activities that are not on the critical path. They should be scheduled in a way that makes the best use of the resources at your disposal.

Look at the figure entitled *"Scheduling for Earliest Start Times"* illustrated on the next page.

All of the activities not on the critical path are scheduled for the *"earliest start time"*. All of the slack time is therefore available if needed.

The next illustration shows the opposite extreme and is entitled *"Scheduling for Latest Start Times."* The non-critical activities are scheduled to start at the *"latest start time"*. There is now no freedom in this schedule and every activity becomes critical. This is because any delay in any activity will delay the total project.
Somewhere between these two extremes there are probably some practical alternatives that make the best use of resources.

Experimentation is the only way to find the best alternative (short of entering all your parameters into a computer program and having the computer generate the answer!).

The Cost Line

The schedule that has been produced can also be used to calculate the project cash flow. Planning for cash flow means ensuring that there will always be enough cash to meet commitments as they fall due.

If the costs estimated for each activity have been entered on the Activity Forms, it should be easy to total these commitments to produce the figures for the cost line. If it is known how much lead time is necessary to produce a cash infusion, the necessary requests, reports etc. can be carefully planned so that progress payments are available when they are needed.

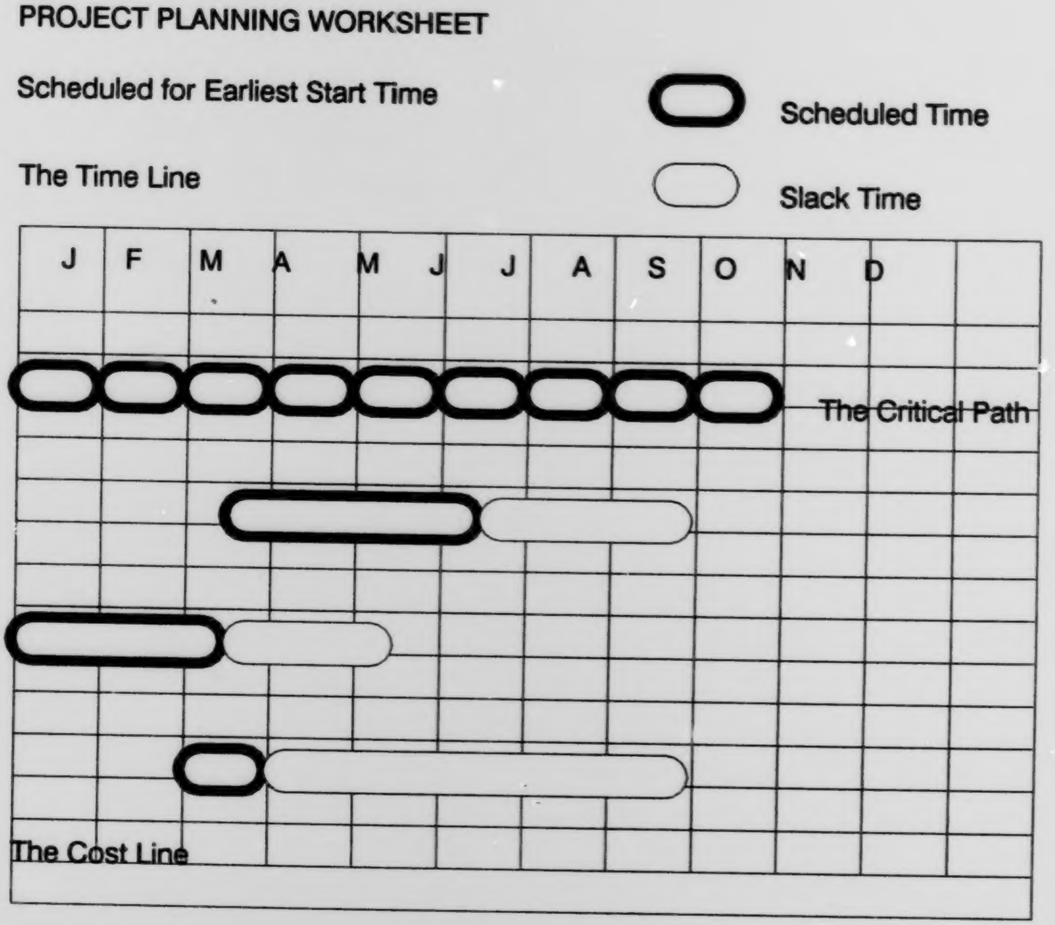
Cash Flow

Even after the schedule has been carefully prepared, it is rare that projects proceed exactly as planned. If an activity on the critical path is falling behind schedule, change the schedule to reflect the change.

If activities that are not on the critical path fall behind schedule, check the slack time available. If there is no slack time, then this activity has become critical and it may pay off to divert extra resources to get it completed.

Keep the schedule up-to-date. Record actual start and finish dates on the Activity Forms. Record actual costs. Move activities to reflect new realities. Recalculate costs both actual and budgeted to reflect major changes. Meet frequently with project staff to let them know how things are going and to get their input regarding changes needed to stay on schedule.

Fig. 10.6 Project Planning Worksheet - Earliest Start Time


PROJECT PLANNING WORKSHEET
Scheduled for Earliest Start Time
The Time Line
Scheduled Time
Slack Time
J
F
M
A
M
J
J
A
S
O
N
D
The Critical Path
The Cost Line

Contingency Plans

For activities on the critical path, anticipate some of the obvious things that could go wrong and develop contingency plans to deal with these eventualities.

This is often called playing *"what if"* games because the idea is to ask *"what if"* questions about each critical activity.

- *"What if the final payment is delayed?*
- *What if we cannot get the required number of volunteers?*
- *What if the materials are delayed?*

After posing the questions, the project planners then develop a contingency plan to deal with the problem when and if it occurs.

(*Remember Murphy's Law: "Whatever can go wrong, will! and at the worst possible moment."*

Another consideration. The *80-20 rule* states that in any series of activities, a small fraction of those activities account for the major effects or influences. This rule is important for project managers since it means:

80% of all problems will probably be caused by 20% of the project activities.

The 80 - 20 rule suggests that a manager should identify those few activities that will be the source of most problems. If the manager is able to develop contingency plans for these activities he will be making very effective use of this time.

This type of management is often called *management by emphasis.* Using this system, the manager makes sure that he is spending 80% of his time and energy on those few and vital activities that will probably cause 80% of the problems.

Chances are very good that when those few activities are identified, they will be on the critical path. All problems on the critical path are serious because they have the potential to delay the complete project. Thus, management by emphasis ensures that extra energy and resources will be available for any problem that arises on the critical path.

Software for Project Management

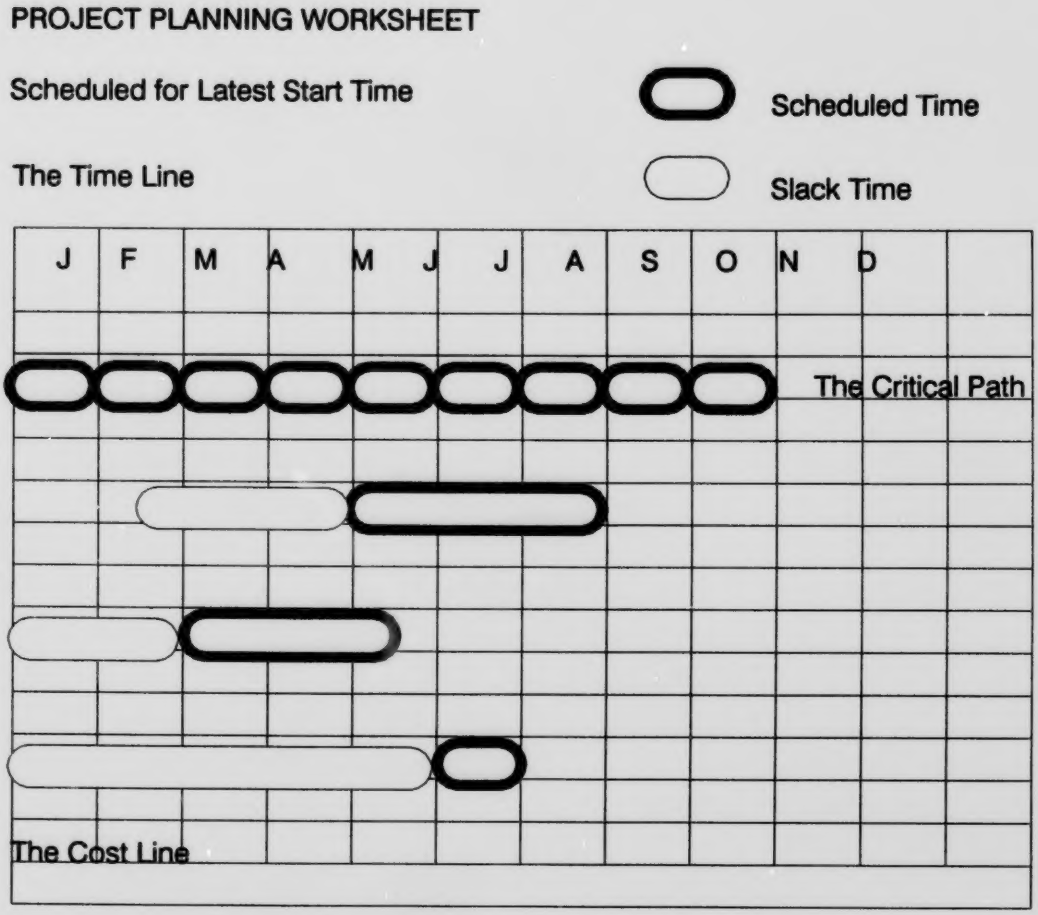
Project planning and control as we have been describing it over the last several pages is an ideal computer application. Software is available that facilitates the development of sophisticated project plans.

Project planning software draws network diagrams, creates schedules and calculates costs. The value of the software is that it allows you to make changes without having to redo the whole plan. For extremely large and complicated projects with many activities and tight schedules, the computer may be the answer to good project management. However, the computer is no substitute for carefully thinking the project from beginning to end.

Using Gantt Charts to Develop a Project Plan

Gantt charts are named after their designer, H. Gantt, who developed first *"Gantt chart"* in the mid 1930's.

Fig. 10.7 Project Planning Worksheet - Latest Start Time

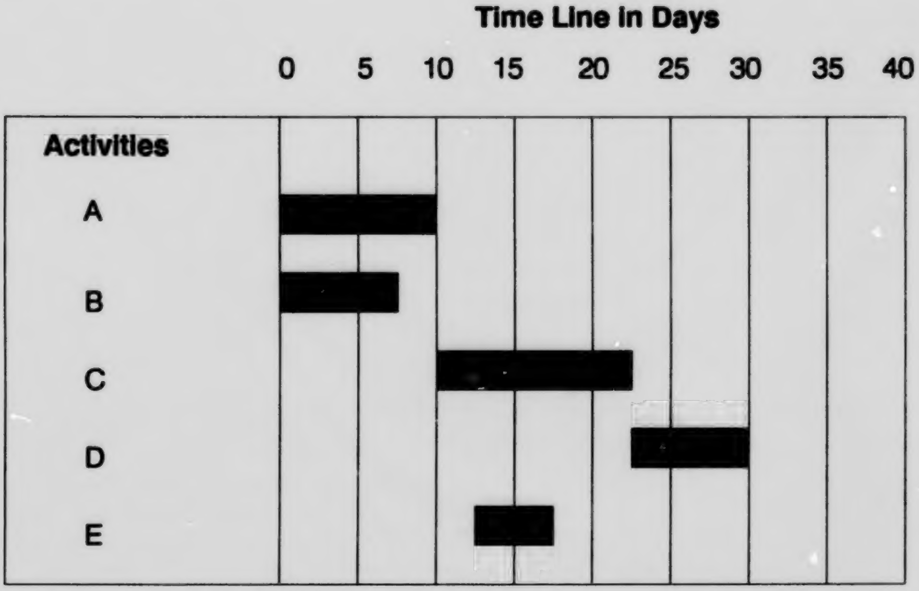


There are two types of Gantt charts:

- Two Dimensional Chart
- Three Dimensional Chart

This chart is often used at early planning stages to quickly describe how the various project activities fit together. It is also used to illustrate the sequence of activities.

Fig. 10.8 Two Dimensional Gantt Chart



1. Two Dimensional Chart

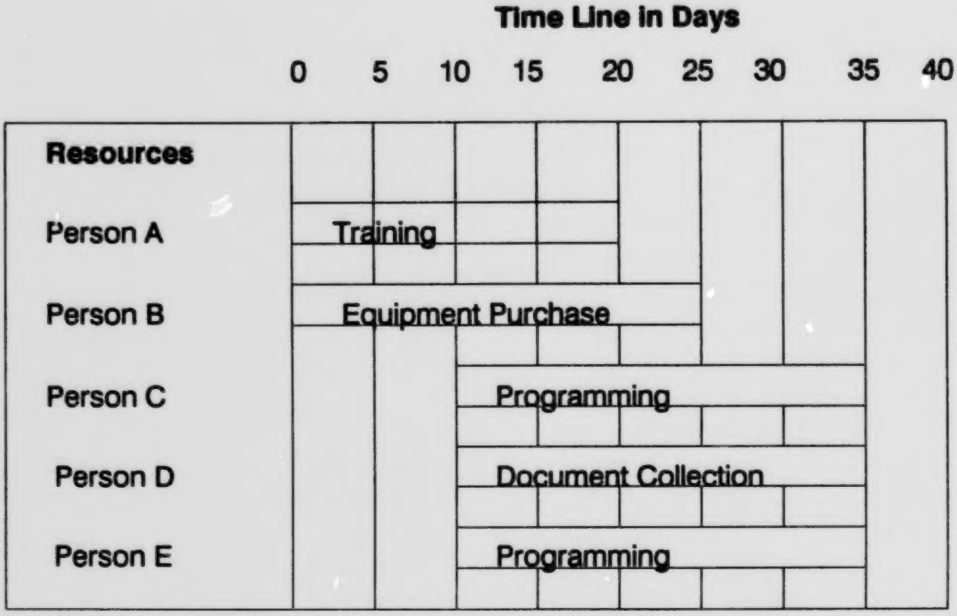
This chart provides a quick reference to the project activities and when they are to start and finish. Note, this chart does not illustrate or explain the relationships or dependencies that exist between activities. The network diagram and the critical path diagrams explained in the previous chapter do that. Nor does the Gnatt chart indicate the number of resources that each activity requires. It does however, show at a glance where activities are concentrated in time (i.e. when more than two activities overlap each other) and where there is a reduced amount of activity.

2. The Three Dimensional (3 D) Gantt Chart

This is called the three dimensional chart because in addition to the dimensions represented by the two axes of the graph: Time (horizontally) and Resources (Vertically), it identifies the Project Activities (a third variable) for each resource and time period.

Since it is difficult to write down the name of each activity and still keep the size of the chart manageable, an activity number is usually indicated on the chart. The number refers to the list of project activities prepared when the work breakdown is prepared.

Fig. 10.9 Three Dimensional Gantt Chart



Advantages of the 3D Gantt Chart for Project Management and Control

The major advantage of the 3D Gantt Chart is that it provides the manager with an outline of how each resource/person will be involved in the project. It therefore, is a very useful management tool especially when used along with a network diagram which sequences the project activities and, when the project is complex, a critical path diagram which guides the manager in resource utilization.

Here is an outline of the advantages of using a Gantt Chart for both project planning and implementation.

Advantages of 3D Gantt Charts for Project Planning

a. During the planning stage, the manager is able to determine if any of the people involved in the project are over or under utilized. For example, the manager may want to use more people and thus complete the project in a shorter time period. On the other hand, he may want to delay the completion date of several activities to make resource utilization more efficient. (We are assuming that these decisions would be made in an interactive way with the members of the project team.)

b. It is useful because it allows the manager to present the project plan to top management in a simple but effective graphic form showing how many resources are required at each step.

c. It illustrates the methodology used and is therefore an excellent addition to a project proposal. Providing more detail on the methodology than what is in the text of the project proposal. The chart itself can be used as a guide to write the text of the project methodology in the project proposal.

d. It facilitates the preparation of a budget. It can also be used to assure that the budget is accurate because it allows the manager to check budget amounts against activities.(Once again a network diagram or a critical path analysis will also serve this purpose. The decision will depend on the complexity of the project. The Gantt Chart is useful for straightforward projects which do not have complex relationships between activities.)

e. From IDRC's perspective, the chart summarizes project activities, budget and time frame. It allows the project officer to determine the number of resources required and to make some initial judgments about whether the resources are needed and whether the project is realistic.

f. When the project has been approved for funding, the project manager can use the chart to explain to each member of the project team what they will be required to do, when, and how these activities contribute to the overall objective. The manager is able to use the chart to negotiate a *"contract"* with each employee regarding annual leave, holidays, deadlines and so on. This process gives the employee the opportunity to discuss the plan with the manager, add suggestions, and make modifications.

Advantage of Gantt Chart for Project Implementation

a. The manager can use the chart to enter into negotiations with each member of the project team concerning the extent of their involvement in the project.

b. The manager can use the chart to monitor progress and appraise the performance of the team members.

Constructing the Chart

Before preparing a 3D Gantt chart certain elements must be in hand.

The most important is the list of activities required to achieve the stated objectives. Within Information Sciences there are different types of projects such as industrial information, factual databases, statistical information systems, agricultural extension, etc. Each of these lead to a different set of activities. Activities are further modified by the particular circumstances and location of the institution proposing the project.

Charting the Activities

The chart lists, for every responsible person , the activity in which he is involved and the period of time that he will spend on that activity. Time span is represented by the solid line extending across the time periods which are identified on the horizontal axis.

To ensure that the activities are properly sequenced, the planner must refer to the network diagram or critical path diagram developed in the previous chapter.

As the time schedule is developed ask:

- Is this realistic?
- Did I allow enough time?
- Are my assumptions realistic?

When the chart has been completed, stand back and analyze it.

- Are any of the team members overloaded?
- Is one person expected to be doing two things at once or be in two places at once?
- Are the resources being used to maximum capacity?

If there are problems there are a number of options:

- Delay one or more of the activities. (As we learned in the last chapter this may not be possible if the particular activity appears on the critical path).

- Recruit additional temporary or permanent employees who can do the job.
- Reassign activities to other members of the project team who have the capacity to do them.

Computer Application

Of the many project management softwares available none of them produce a 3D Gantt Chart. However, the Lahore University of Management Science has developed one using a Lotus 1-2-3 application.

Fig. 10.10 Preparing a Gantt Chart

Exercise - Preparing a Gantt Chart

The following information is provided.

a. A list of the project activities with information about who is to complete each activity and the time that is required.

b. A list of the resources available.

c. Specific objectives for this exercise.

d. Steps to follow in preparing a Gantt chart.

e. A blank space to design your own Gantt chart.

Project Activities

Activity Number	Activity Description	Resource	Actual Time
1	* Training of Project		1 wk
	Leader in staff motivation	P.L.	2 wks
2	* Recruiting new personnel for project	P.L.	2 wks
3	* Training on Micro CDS/ISIS	Consultant	2 wks
	All staff		2wks
		Computer	2 wks
4	* Draft an acquisition policy	Librarian	2 wks
5	* Final Project evaluation	Consultant	2 wks
6	* Select and adapt a classification		
	and cataloguing system	Librarian	4 wks
7	* Review & approve acquisition policy		
	and calaloguing system	P.L.	1 wk
8	* Develop a keyword list	P.L.	5 wks
		Librarian	5 wks
9	* Have a party	All staff	1 day
10	* Design the bibliographic database	P.L.	2 wks
11	* Index and Abstract documents in		
	the library (3,500 documents at 35/wk)	Librarian	100 wks
12	* Enter references of existing	Secretary	14 wks
	documents in the database (250/wk)	Computer	14 wks
13	* Index and abstract new		
	acquisitions (500/year)	Librarian	14 wks
14	* Enter new acquisition on database	Secretary	2 wks
		Computer	2 wks
15	* Produce Bibliography	P.L.	4 wks
		Computer	2 wks
16	* Print Bibliography	P.L.	4 wks
		Printer	4 wks

Resources Available
Project Leader (P.L.) Information Scientist
Librarian (Lib) trained in industry abstracting and cataloguing
Secretary (Sec) who is computer literate
Consultant (Cons) Expert on CDS/ISIS and Information Sciences
Microcomputer (Micro) with CDS/ISIS and required supplies
Print shop (Print)

Note: Extra resources with acceptable qualifications can be easily recruited from the local market.

Objective
The objective is to print one bibliography covering the present contents of the library, at the end of the 11th month.

Procedure
1. Sequence the activities.
2. Using a pencil schedule the first activity. Mark the activity number on top of the line you have drawn and circle it.

Fig. 10.11 Your Own Gantt Chart

Chapter 11

Planning Management of Equipment and Capital Resources

Introduction

Equipment and supplies represent a large investment. For some projects it represents more than 25% of the total project budget. Because inappropriate or faulty equipment can cause delays in project activities and affect the quality of services offered, particular attention should be paid during the project planning phase to selecting and purchasing appropriate equipment. In addition, serious consideration should be given to the management of capital equipment. This involves careful equipment selection and effective implementation of a preventive maintenance program.

It is not IDRC policy to select, purchase, install or maintain equipment. Recipients are responsible for the management of all capital equipment required by their projects. Project managers are free to select equipment of their choice. This choice should be based on expediency, appropriateness and context.

The ability to order, install, operate, maintain and repair equipment is important in terms of building institutional capacity. If responsibility for equipment and capital resources is left to an outside agency, the recipient will lose valuable "*hands on*" contact with the delivery mechanism and project methodologies.

Thus although IDRC sometimes administers certain project components, one of which may be the purchase of equipment, IDRC usually gets involved only at the recipient's request. These requests are often made to IDRC due to problems in obtaining foreign corrency on the part of the recipients. In this case, clear directions must be provided to the Centre.

Selection and Purchase

Following are some of the factors to be considered when selecting equipment.

Specifications

Equipment is required to perform specific tasks related to obtaining project objectives. These tasks are clearly defined in the project summary. It is not the equipment that counts, it is the output it produces. Therefore, it is important to specify exactly what is required from each piece of equipment in terms of methodology to be followed and results expected. It is therefore important to consider the use of equipment in the context of the social environment. For example, the effective use of microcomputers depends on the software and how it is applied. Choice of software should be considered before hardware, and should be selected based on compatability with equipment being used by the host institution as well as at national and regional levels.

Costs

The cost of equipment represents only one factor that has to be taken into consideration at the time of purchase. Total costs consist of:

- Acquisition.
- Installation (including wiring).
- Maintenance.
- Cost of producing the output.
- Cost of supplies.
- Training.
- Operational (staff time, etc).

Other Factors

Repair costs are difficult to estimate but if a service contract is negotiated the institution is able to prepare an accurate repair and maintenance budget.

Other factors to be considered when purchasing equipment are:

- Local availability.
- Useful lifetime (of parts as well as equipment as a unit).
- Ease of operation (in relation to training and operational requirements).
- Obsolescence.
- Availability of spare parts and service.
- Equipment capacity.
- Reliability of equipment.

Standardization

When purchasing several pieces of equipment it is often wise to deal with only one manufacturer. Lack of uniformity could mean additional expense, additional administration and extra training. Whenever possible, purchase equipment similar to that already in use.

Standardization can also be attained at the national level through resource sharing. This is important when there is no local equipment dealer. National institutions can then pool spare parts, share in training, and reduce the costs of maintenance.

Preventive Maintenance

Preventive maintenance is necessary to counteract deterioration and reduce equipment failures. However, a good maintenance program requires good management.

Maintaining a spare parts inventory requires a systems approach. While it is obvious that the light bulb used in a microfiche reader-printer will eventually burn out, it should be planned for. It is less obvious when a motor will break down or when a bearing will wear out and the size of the spare parts inventory should depend on how quickly the part can be obtained, how expensive it is and how often it has to be replaced.

When there are no local distributors or suppliers, the best solution is to keep a stock of *"consumable"* spare parts and to develop, at the time of the equipment purchase, a plan of action to obtain replacement parts.

Another alternative is to train a local technician. At the very least, staff should be trained in proper maintenance procedures. Equipment, if correctly used and adequately maintained, will break down less often than equipment that is not maintained.

Repairs

When equipment breaks down, the repair process involves:

- Identifying the problem.
- Identifying and removing the broken part.
- Identifying a supplier.
- Ordering.
- Replacement.
- Correct installation.

Troubleshooting

When major problems arise it maybe necessary to obtain specialist help. Before seeking help outside the country, a careful search should be conducted nationally. Possible sources are the National Bureau of Standards, professors and university students in departments of electronics or mechanics and technicians from other scientific institutions. In the case of microcomputers, for instance, the advice of local users group might be sought when available.

Many projects use equipment that was given to the institution by donors often without plans being made for its repair and maintenance. If this equipment is still useful, it should be examined to see if it can be brought back into service and used in the project.

Conclusion

A good capital equipment management plan involves:

- Ensuring that equipment is appropriate to project outputs.
- Attempting to acquire resources locally.
- Including maintenance contracts when possible.
- Providing training in equipment operation.
- Providing repair and maintenance training.

The Information Sciences Division is aware that dependable and reliable equipment is necessary in order to realize project objectives. In this regard, a training workshop was held in October 1988 on the maintenance and operation of microfilm equipment. Other projects concerning repair and maintenance of equipment may be developed.

Chapter 12

Networking and Twinning among Science and Technology Information Project Managers

It is realized that there is a great wealth of expertise in the projects funded by IDRC. From time to time we have been able to call on this expertise to help other projects. In order to build on this capacity for self-help, an important part of the meeting focused on networking and twinning. Three types of networking activities were encouraged among the 26 science and technology information project managers represented at the meeting: informal contacts, participatory links and formal links through "twinning". (See Fig. 12.1).

Informal Contacts

Participants were encouraged throughout the week to make informal contacts. This occurred in class, over meals, and informal meetings and discussions. As well, IDRC tried to encourage this contact first by organizing the seating arrangements so that those with similar interests, problems, projects etc. were seated next to each other. Secondly, IDRC abandoned the formal seating arrangement half way through the week allowing project managers to sit wherever they wanted allowing a natural selection of informal contacts to take place.

These informal contacts are a powerful source of information and have been called the "*invisible college.*" The idea at the project management meeting was to give people the opportunity to develop through informal contacts their own invisible college hoping that this would be maintained by correspondence and perhaps through exchange visits.

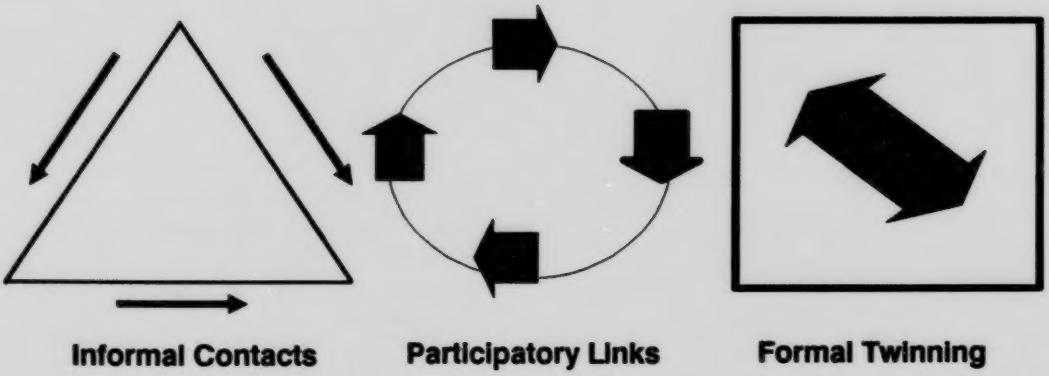
One of the results of these informal contacts was the suggestion made for a STI Group Newsletter which would:

- Provide information about hardware and software.
- Provide information about training opportunities.
- Introduce new and forthcoming products.
- Focus on STI case studies.
- Announce forthcoming meetings.
- Introduce new STI publications and products.

Fig. 12.1 Making Informal Contacts

Twinning

- **The goal**: use the meeting to establish new professional contacts.
- **Organize** take names/addresses, exchange business cards. Take time to organize.
- **Be an activist** promote your services
- **State your problems**/raise your visibility. You can do this by listening to others and comparing
- **Make first contact.** Open conversation positively. Make it your business to find out as much as possible about your colleague and you'll find a willing partner.
- **Build** on your contacts by asking "*who do you know who could...?*" or "*Do you know where I could find.....?*"
- **Keep in touch** by regularly writing letters. exchanging information, sending articles of interest.
- **Thank** people who help you. This will reinforce and strengthen bonds.
- **Share** your information with others. Encourage your colleagues to share information and help.



- Cover news from the field of information management from Africa, Asia, The Caribbean and Latin America.

Participatory Links

IDRC also tried to encourage the development of more informal networks and the development of direct partnerships between projects with similar objectives but who are:

- Located in different regions or countries.
- At different stages of development.
- In a position to help another project because of solid resources, good methodology, skilled personnel, or excellent project outputs.

The Process

Program managers made the initial decisions about which projects were to be twinned based on the above criteria. When the project managers met for the first time, they were directed through a structured interview process (each interviewing their partner and vice versa) which was designed to help them discover everything they could about their partner's project including:

- Project objectives.
- The planning process.
- The methodology.
- The resources applied to objectives.
- Problems encountered.

Following the structured interviews, the participants had complete knowledge of their partner's project and how it differed from and resembled their own. They were then directed to prepare an action plan using the guidelines outlined in Fig 12.2.

Sectoral Meetings

More formal relationships were encouraged during the Sectoral Meetings. The STI program is implemented through four subprograms:

- Agriculture.
- Industry, Technology and Shelter.
- Earth and Marine Sciences.
- Science and Technology Information Systems.

Since participants at the meeting represented information projects IDRC is supporting in these areas, the sectoral meetings brought together all projects administered under one subprogram.

Each of the three Program Officers provided the leadership and participants were given the opportunity to:

- Share information.
- Discover what their programs had in common.
- Discuss common problems.

It was intended that formal or informal networks would result. Successful networks are always based on sound structural principles. The Program Officer for each sector attempted to honor these principles by:

- Focusing the participants on issues of common interest.
- Helping the members recognize the need to exchange information.
- Encouraging members to contribute so that they in turn could gain from the information others had to share.
- Encouraging each Project Manager to participate.
- Encouraging others to share their expertise.

Hands-On Experience

We'd never have made it to the moon without a spirit of interdependence, and we'd never have eradicated typhoid, small-pox, and polio without cooperative effort. We have found that we are becoming increasingly interdependent -- not only in our country, but also all around the world. Helping each other to solve problems, knowing that you have a colleague elsewhere doing similar work, is a source of strength. This is what we mean by "Twinning". It means developing our own professional network.

Fig. 12.2 Guidelines for Preparing Twinning Action Plans

Preparing A Twinning Action Plan

1. Prepare an Action Plan to help managers:

- Individually.
- Through institutional cooperation.
- Through networking.
- Through south/south cooperation.
- Through information exchanges.

2. Identify Individual Project Strengths and Weaknesses.

- What have you done well?
- What do you need help with?

3. Identify Problems.

- Individual management problems.
- Project problems.
- Mutual problems.
- Institutional problems.
- Common areas of concern.

4. Suggest Solutions.

- Share experiences.
- Use individual experiences to reach a novel or unique solution.

5. Consider Exploring these Areas.

- Building more effective work teams.
- Managing your time more effectively.
- Meeting schedules and specifications.
- Solving technical problems.
- Meeting training needs and priorities.
- Networking, information exchanges and south/south cooperation.

Selected Twinning Action Plans

Following are two examples of the action plans developed during the Twinning exercises.

1. Earth and Marine Sciences Group (EMSI)

The members of the Earth and Marine Science Group met to find their mutual interests and identify areas where they could support and assist each other in the project. Three major issues were considered for action plans.

Issue No. 1

How to increase the usefulness of the project experiences and outputs, not only locally but also among the countries.

Plan of Action

- *Exchange of information - RIC, SEAWIC and INFIS agreed to assist each other in the acquisition of literature relevant to their specific needs, eg. rattan, aquaculture.*
- *Exchange of accession lists, project reports and other institutional resources among fisheries projects (INFIS, FIMIS, SEAWEED and In-shore Fisheries Information System).*
- *FIMIS will look into the possibility of using E-mail ((Science-net) for the exchange of information among the fisheries projects. It was suggested that other projects should consider joining.*
- *ADAP will provide data input sheets to SEAWIC.*

Issue No. 2

How to increase effectiveness on the dissemination of STI in support of each other.

Plan of Action

- *Each member of the Earth and Marine Sciences group agreed to be a contact person and act as a referral point for information required from his/her country.*

Issue No. 3

Improve the professional skills of the people who are responsible in information handling/management.

Plan of Action

- *To explore the possibilities of conducting specific training courses either in the country or at the regional level. Training areas should cover:*
    - *Information Science and library management.*
    - *Computer management for system analysts and programmers.*
    - *Project design and planning, personnel management and evaluation.*

2. Twinning Two Fisheries Information Projects:

In-shore Fisheries Information System (Chile) and Fisheries Management Information System (Trinidad and Tobago)

Objective

The objective of the twinning exercise was to establish formal and defined linkages between the two projects to allow each to learn from the experience and development of each project and executing institutions.

Rationale

Both projects address the same sectoral problem in Chile and Trinidad & Tobago - that of providing a decision-support system for the central government to monitor and analyze developments in marine fisheries in a timely, rational and efficient manner for the ultimate benefits of the fishing communities.

Both projects will improve the marine fisheries management capabilities of their respective institutions and will develop systems through a series of similar activities. The projects share common procedures, investigations, information and reviews. They will output similar products and overall system design.

Establishing Communication

Both executing institutions (Instituto de Fomento Pesquero, Chile and the Fisheries Division, Ministry of Agriculture, Trinidad) will be linked electronically through the electronic mail network system SCIENCE.NET. This will allow access to many international institutional nodes that can support the project's activities ie. ICLARM, University of Miami, IAMSLIC as well as IDRC (Ottawa) to facilitate monitoring and information access and retrieval. Particular attention will be paid to sourcing documents/information that address system design aspects.

Through personal contacts (telephone and mail) the progress of project activities will be monitored on a regular basis and experiences shared. The institutional linkages of each institution will be utilized to provide complementary strengths ie. the Latin American and Pacific contacts of IFOP, and the Caribbean and Central Western Atlantic contacts of the Fisheries Division. In this way the information resources of continental North, Central and South America will be utilized.

Information Exchanges

On a regular and continuing basis information sources feeding each project will be exchanged. These include library accession lists from each institution, literature searches, software listings (commercial and customized), and accumulated references from each institution relating to system design and marine fisheries management.

Products from each project will be exchanged. These include forms utilized, manuals produced, and promotional materials, reports of study tours, formats of reports prepared by system analysis and project staff and computer programmes developed for data capture, validation, organization, analysis and report generation.

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SECTION V

Project Sustainability

Chapter 13

Delivery of Project Outputs

The Concept of Information Resources

Information has been defined as ideas, knowledge or something that can be communicated and has the potential to inform. Information is collected, stored, processed, analyzed, and disseminated through various methods and media. Generally speaking, an information project has the broad goal of ensuring wide and efficient access to information for a well defined target group or user community.

Projects outputs are the products or results of the project with which the user interacts. The extent to which the outputs meet user needs determines the extent to which the information project is able to meet its objectives. For the purposes of this paper, the concept of outputs is not restricted to the physical outputs, but encompasses the broad range of information resources. These include both information sources, i.e. holdings, as well as information handling methods, media and systems. Here, one must realize that having the right information at the right time, in the right form, at the right cost, can only be realized to the extent the available information resource base permits. Typical outputs of information projects are listed in Fig. 13.1.

Information Resources Building

The building of information resources starts with a good understanding of the business that the project is in, i.e. the context within which the project is carried out. The kind of resources to be built and methods employed in building the resources are determined and influenced by the context. Thus the process of information resources building begins with:

- Understanding the parent institution - its mandate/mission, goals and objectives, priorities and resources, as well as socio-economic, cultural and the political environment in which it operates.
- Understanding the parent institution's programs and activities.
- Identification of target or user groups.
- Analysis of the information needs of the target or user group both for contents and for the determination of media to be used.
- Inventory of available information resources, both internal and external to

Fig. 13.1 Examples of Outputs of Information Projects

Information Sources

- Accession lists, contents pages, etc.
- Bibliographies.
- Directories and Inventories of institutions, experts, equipment, resources, etc.
- Databases of bibliographic, numeric and factual information.
- Extension materials, Information sheets, etc.
- Films, slides, audio tapes and videotapes.
- Literature reviews.
- Maps.
- Microfiches, films.
- News articles, announcements.
- Newsletters, journals and books.
- Proceedings of meetings.
- Reports on trends.
- State-of-the-art reviews.

Information Services

- Analysis.
- Current awareness, including selective dissemination of information.
- Document delivery.
- Packaging and repackaging.
- Professional advice.
- Question and answer.
- Referral.
- Training.
- Translation.

Information Systems

- Bibliographic and data systems.
- Networks at national, regional and global level.
- Software packages.

the institution in order to identify an unfullfilled need.

The next step in the resource building process is the determination and analysis of user needs. The major reason given for the under-utilization of project outputs is that the information contents and media used do not respond to user requirements. These requirements/needs are generally determined/influenced by organizational, motivational and psychological factors related to the user as well as other factors such as the research phase, amount of information already available, and the rate of development taking place in a given field i.e. rate of new information generated. Thus, designing project outputs should begin with an analysis of user requirements. One way of undertaking this analysis could be by answering the five Ws and one H. That is by asking:

- Who are the users of the information?
- What information do they use?
- Why do they use what they use?
- Where do they use the information?
- When do they use the information?
- How do they use the information?

Answers to these questions will help determine appropriate information contents and the media to be used. Furthermore, the nature and characteristics of each output must be understood and determined. For example, analytical reports would be an appropriate output for policy makers who need to be informed on current trends. Information sheets explaining the "how-to's" would be useful for extension workers who need to make effective demonstrations in the field. Literature reviews would be valued by scientists who need to design a new research project.

Design of Project Outputs

Good project outputs that satisfy user requirements have high quality and utility value. Some of the factors that contribute to the quality and utility of project outputs are shown in Fig. 13.2.

Fig. 13.2 Factors Affecting Quality and Utility

Accuracy
Comprehensiveness
Credibility
Currency
Relevance
Reliability
Validity

Accessibility, both intellectual and physical
Adaptability
Affordability/Cost effectiveness
Browsability
Ease of use
Reproducibility
Stability and durability
Selectivity
Timeliness

An Example: The Newsletter

In the following paragraphs, the application of some of the elements described in this chapter are examined using a newsletter as an example.

The strength of the newsletter lies in its simplicity - simple in design, simple in format and simple in writing. It is easy to produce short, easy to read and provides timely information to the specific target group. The factors that should be taken into consideration in the design of a newsletter are:

- Nature of field to be covered.
- Purpose of the message e.g. teach, inform, announce, advertise,
- Characteristics of users.

These in turn will determine:

- Frequency.
- Size and length.
- Contents which should be accurate, current relevant and selective.
- Format and lay-out which should be simple, clear, easy to read and attractive.

The result will be a simple, relatively short, compact information product that gives items of news that are current and relevant to readers and that will attract and hold the readers interest/attention while conveying the message.

Conclusion

The project outputs should be designed to meet current as well as future needs. In order to sustain the quality and utility of the project outputs, the project manager must continuously assess the feedback, identify areas for improvement, areas of strength and weakness and the relative advantage of specific outputs over other information resources. In doing so, consideration should be given to elements that are subject to change such as user requirements, the environment under which the parent institution operates and the goals, objectives and resources of the institutions.

Finally, it must be borne in mind, that the project manager is accountable for the quality of the project outputs which in turn determine the success of the project in meeting its objectives.

Chapter 14

Promotion of Project Outputs

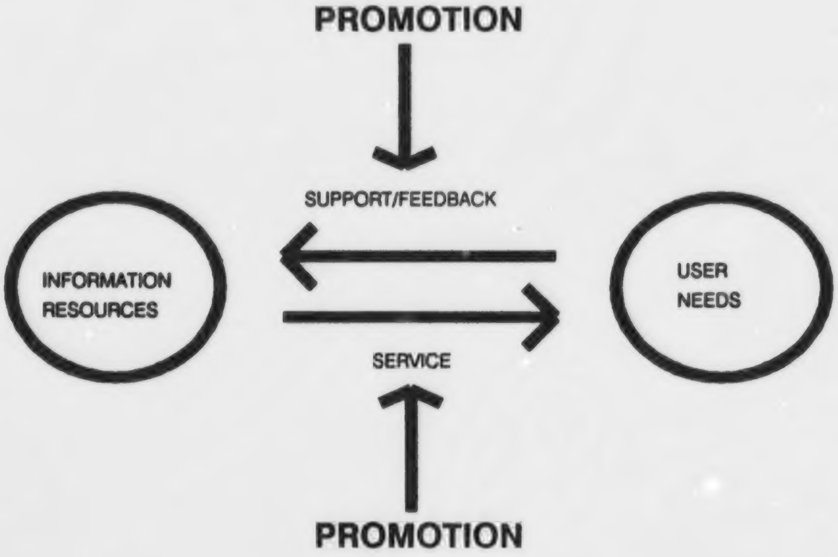
The principal goal of most Information Sciences projects is *to provide and disseminate information to a defined user community.* That is, information is collected, organized, analyzed and packaged for a specific use. The achievement of project goals is linked directly to the extent to which the projects outputs meet the specified user needs.

Although most project managers feel their project outputs meet users' needs, indications are that utilization of the subject output could be improved.

Developing a Promotion Strategy

Promotion may be defined as a *planned activity to identify, attract, service and gain support of user groups in a manner that advances the goals*

Fig. 14.1 Promotion of Information Services



and objectives of the information project and the parent institution.

Successful promotion requires a carefully formulated strategy. Strategy development should include the following steps:

1. Intelligence Gathering.

Reliable and timely information is essential for launching promotional programs. Information must be gathered about characteristics of current and potential users, adequacy of information sources, needs that are not presently being met, the institutional environment, priorities, existing resources, ability of the staff, etc.

2. Selection of a Target Group.

It is important to have an accurate description and clear understanding of the current and potential users. Design of outputs and selection of promotional methods depend on the target.

3. Design and Development of Outputs.

The process of designing and developing project outputs that have high quality and utility value is discussed in Chapter 13. No promotional methods will help unless the project outputs have the quality and utility that satisfy user requirements.

4. Promoting the Outputs.

Good communication is key in informing and educating users. When selecting the promotion and communication strategy consideration should be given to socio-ethnic factors, institutional environment and of course, the target group.

5. Developing a Strong Relationship with the User.

A strong support network throughout institution and user groups should be developed and maintained.

Fig. 14.2 Quality and Utility of Project Outputs

Quality and Utility Considerations

1. Improved quality and utility encourage use of information.

2. Ignoring the quality and utility issue is tantamount to project suicide.

3. High quality and utility are powerful ingredients in a successful competitive strategy.

4. Promote only that which you can deliver.

Encouraging Information Use

User's satisfaction with the product is determined by expectations. If the project outputs exceed their expectations they are satisfied. If the product does not meet expectations they are dissatisfied.

Meeting and exceeding expectations means providing a information service that is:

- Relevant.
- Timely.
- Easily accessible.
- Easy to use.
- Approachable.
- Reassuring.

To encourage use of project outputs, special attention must be paid to presentation and should offer:

- A response to user problems.
- Balanced coverage.
- A professional approach, including professional discretion and confidentiality.
- Reliability.
- User training.
- User feedback.

In addition, it should go beyond in-house information sources and offer a reference and collaboration service with other experts and other information sources.

Communication

Both written and oral communication methods can be used to promote information services and products.

Examples of written promotional methods include:

- Contributions to newsletters and bulletin boards that reach the target group.
- Reports on special topics, project status reports, and annual reports.
- Information packages about services and products being offered.
- Contributions made to professional journals/publications.
- Newspaper announcements.
- Exhibits.

Examples of oral communication that effectively promotes outputs include:

- Holding meetings with staff and/or users.
- Meetings with staff and/or users.
- Conducting seminars and lectures. Two examples are: orientation seminars for new employees and seminars designed to provide information to the user group.
- Organizing an "*Open*" house which could include demonstrations, orientation tours, etc.
- Presentations at professional meetings.
- Visits to user institutions.
- Announcements made over radio or television.

While any of these methods can be used in promoting the project outputs, their effectiveness depends on such factors as socio-ethnic and institutional environment and characteristics of the target group.

In conclusion, as noted earlier, satisfaction is the underlying factor that encourages the use of information. Promotion therefore, should begin with quality outputs that not only meet the user needs, but also exceeds their expectations. This means that only those outputs that can be delivered should be promoted. Promoting something that can not be delivered quickly destroys credibility.

Fig. 14.3 Successful Promotion

CORNERSTONES OF A PROMOTIONAL STRATEGY

1. Knowledge of the target group
2. Product knowledge
3. Promotion strategy
4. Support network

SECTION VI

Evaluation

Chapter 15

Project Evaluation

Evaluation Worksheet

The last step in our four phase Project Management Process is Evaluation. Refer to worksheet number 5. Note that it allows you to do an *"Overall Evaluation"*, an *"Implementation Evaluation", and on the reverse side it considers special ques*tions that the key stakeholders will likely have about your project. Let's look at each part separately.

Overall Evaluation

For the overall evaluation we go back to the idea that a project is designed to respond to a problem that is represented by a *"gap"*. This time however, we focus on the gap between where we had planned to be and where we actually are, now that the project is over.

If there is no *"gap"*, the worksheet directs you to questions that focus on what was learned from the project.

If the *"gap"* still exists, the worksheet directs you to questions that will lead to the next action or project.

Implementation Evaluation

An Implementation Evaluation simply focuses on planned costs, actual costs and any major deviations from plan.

Special Evaluation Questions

The reverse side of the worksheet is designed to help you consider evaluation at the beginning of the project rather than just at the end. Plan the evaluation and try to make it a useful part of the project.

This approach to project evaluation assumes that results will be analyzed and then considered when the next project is being planned. Unfortunately, this kind of evaluation is rare. Most evaluations are done because it is required by the funding agency.

What is a Good Evaluation?

A good evaluation is one that *gives us useful answers to the important questions that we have about our projects.* There are some very important points to consider in the above statement.

WORKSHEET #5

(the purpose of evaluation is to answer important questions that key people have about your project. At the end of a project, the key questions are concerned with whether or not the "problem" is resolved

OVERALL EVALUATION

Project End State

where are we now? (at the end of the project) Current Date ______

______

What data do you have to support the above description? ______

______

GAP

is there a gap?

☐ YES - is it significant? ______

- is it worth working on? ______

☐ NO - what have you learned? ______

- what will you do to pass your learnings to others? ______

how will you use your learning or other projects ______

What was the goal or desired state? Target Completion Date ______

Where had we planned to be?? at this time? (when we started the project?) (See worksheet #1)

______

IMPLEMENTATION EVALUATION

Summarize planned costs

step one: ______ $ ______ $ ______ $ ______ $ ______

step two: ______ $ ______ $ ______ $ ______ $ ______

step three: ______ $ ______ $ ______ $ ______ $ ______

step four: ______ $ ______ $ ______ $ ______ $ ______

step five: ______ $ ______ $ ______ $ ______ $ ______

step six: ______ $ ______ $ ______ $ ______ $ ______

$ ______

Summarize actual costs

step one ______ $ ______ $ ______ $ ______ $ ______

step two ______ $ ______ $ ______ $ ______ $ ______

step three ______ $ ______ $ ______ $ ______ $ ______

step four ______ $ ______ $ ______ $ ______ $ ______

step five ______ $ ______ $ ______ $ ______ $ ______

step six ______ $ ______ $ ______ $ ______ $ ______

$ ______

deviations from plan (look at each significant deviation from the plan. Why did it occur? What impact did it have? What learnings did it lead to? etc?

PHASE FOUR: – EVALUATION WORKSHEET (cont'd)

(some projects explore new areas of action. People will have questions other than "did the project resolve the problem?" or "did actual costs approximate planned costs?" These other questions may be more important. Examples might be "Were local resources used and if so what was the consequence?" "Did the project come under local management and if so what was the result?" If these questions or others are going to be answered, you should develop a plan to answer them at an early stage rather than wait to the end. This worksheet will help you both plan and complete such an evaluation)

PLANNING FOR EVALUATION				
key evaluation question	whose question is it?	what will be done with the answer?	what data is needed to answer it?	who will collect data and how?
1				
2				
3				
4				
5				

PRESENTING & USING RESULTS		
what is the data on the question?	what is the answer to the question?	what decisions result from the answer to the question?

"**Us..**" We are the people with the biggest stake in the project and it is our needs that must be met and our questions that must be answered.

Useful Answers.." Utility is the key criterion. Does the evaluation allow us to make decisions that serve to maintain or improve our performance?

Important Questions.." There are trivial questions and there are important questions that can be asked about every project. Time allocated to evaluation is often limited, therefore it must focus on the important issues.

Everything else concerned with evaluation is secondary and deals with how you get the answers to those questions.

It is important that the evaluation give the key stakeholders useful answers to important questions that they have about their projects. It is less important that the evaluation be methodologically sound and defensible among a group of professional evaluators!!!!!

It would be nice if evaluations were *both* useful to the stakeholders and methodologically perfect - but this is an ideal that is tough to achieve. Someone will always be able to find shortcomings in the methodology. Concentrate your energy and efforts on utility. Is the evaluation useful? Will it help us to manage future projects more efficiently?

As the project manager, it is your job to manage the evaluation process even if it is being done by the donor. When IDRC decides to do an evaluation, it is important that the stakeholders assure that:

1. It is *their questions* about the project that are being answered and not simply those of the external evaluators or the donor.

2. The questions being answered are the *vital few* that allow the stakeholders to make important decisions about the future and not the trivial many that are of no consequence.

Steps in Carrying Out An Evaluation

Managing the evaluation involves the following steps:

1. Identify the key questions that you want answered about your project. This is the basic step. What do you and the other key stakeholders want to know that you don't already know.

If the key questions are not obvious, call the stakeholders together and get them to fill in the blank in the sentence that follows,

"I want to know...... about this project."

Let each person fill in several blank sentences. Collect them and compare them. Select 6 to 8 of the most common questions and be sure that the evaluation provides answers to these.

2. Select the most cost effective method(s) of finding the answers to those key questions.

3. Find the answers.

4. Report the answers to those with a genuine need to know (including of course, donors).

5. Use the answers to make decisions.

The IDRC Evaluation System

Evaluation Purpose

Within the IDRC, evaluation is largely a retrospective assessment of an ongoing program or a completed project in terms of its value and/or effects.

Evaluation findings are fed into the Centre's planning system to facilitate and improve decision-making within the Centre. For example, evaluation information is used to make funding decisions and formulate policies.

There are three reasons for conducting an evaluation: accountability, corporate memory, and future decision-making.

1. **Accountability.** There are two types of accountability: internal and external.

Internal accountability is defined in terms of the degree to which project/program objectives are met in relation to the resources deployed.

External accountability is defined as reporting to the Parliament of Canada on how IDRC spends the money it receives annually from the Government of Canada.

2. **Corporate memory** involves providing a summary record of what happened that can facilitate follow-up planning and utilization activities.

3. **Future decision-making** is of course facilitated by the information and analysis flowing out of an evaluation.

Figure 15.1 shows IDRC's Planning and Evaluation Cycle, illustrating how evaluation information from IDRC projects and programs fits into the Centre's overall decision-making framework.

IDRC conducts three levels of evaluations:

- Project Completion Reports (PCRs);
- Evaluation and Policy Studies;
- and In-Depth Divisional Reviews (IDDRs).

PCR's

These provide a synthesis of the project results and are prepared by Program Officers, six months after the completion of a project.

PCRs are prepared for IDRC internal use only and are a useful planning tool when they are well prepared. There are six Centre- wide guidelines which must be followed prior to the preparation of PCRs; however, each division is entitled to tailor these questions to reflect programming directions and procedures.

These questions are as follows:

- What project results were achieved and did project activities and results follow project objectives and methodology?
- Did the project result in building institutional, managerial or individual scientific capability?
- What publication or dissemination of results have been achieved?
- What lessons were learned which would allow IDRC to develop better projects in the future or to improve its policies and practices?

- What follow-up action, if any, is required?
- Was the project worthwhile?

Evaluation and Policy Studies

Evaluation and policy studies are retrospective in nature; i.e., they examine past and even ongoing activities. They assess the value of those activities relative to objective(s) or information needs. These studies can be undertaken either by Centre staff or by external consultants. They cover activities that may involve a single project or a group of projects within programs, countries or institutions. They also deal with policy questions that have Centre-wide implications. In practice, the number of possible studies in this category is greater than the resources available to conduct them.

Divisions are responsible to conduct project and program evaluations. The Office of Planning and Evaluation (OPE) concentrates on studies related to Centre-wide policy issues. In some cases, OPE will collaborate with the divisions to undertake program and even project evaluations.

Given the growth in the number of projects supported by IDRC in the last few years, it is necessary for the Centre to be selective in terms of what projects/programs or issues to evaluate. Centre staff are encouraged, therefore, to prepare evaluation assessments prior to committing resources to any individual evaluation.

Framework for Evaluation Assessments

These assessments honor the following framework:

- Client (s). Who is the study for?
- Purpose of the Evaluation. What does the client want it for?
- Evaluation issues. What are the principal issues to be addressed?
- Information Requirements. What quantitative and qualitative data are required in order to address the key issues?
- Methodology. What approach (es) can be used for the collection of data
- Resource Implications. What could be the overall cost of the study (in terms of person days, fees per day, travel costs, etc.)? What date is the final report required by the clients?
- Conclusion. Should a formal study be carried out? Which methodology and approach appear to be the most effective?

A copy of the assessment report is sent to OPE for their suggestions.

In-Depth Divisional Reviews (IDDRs)

An In-depth Divisional Review centres on an analysis of past divisional activities and future intentions. It is undertaken every 4-5 years to allow the division to make deliberate and strategic choices with respect to the volume of resources, programming directions and types of support.

An important part of the IDDR evaluation process is the requirement that a division conduct an assessment of its past performance for the purpose of planning future activities. The division attempts to determine, for example, whether or not it should continue to fund certain activities; whether a specific program fits national priorities or whether an activity raises some policy issues of interest to IDRC. Great use is made of all kinds of information provided by project managers, researchers, etc.

It is important to note that PCRs and IDDRs differ from evaluation and policy studies in that they are "*set*" activities within the Planning and

Fig.15.1 The IDRC Planning and Evaluation Cycle

A. PLANNING INFORMATION

The Demand for Resources

* Development problems and needs.

* Research for Development priorities.

* Economic, social and political conditions.

The Supply of Resources to Research

* National, regional, international research institutions and systems.

* Other Donor agencies.

* The nature of the research for development process.

* Evaluation and policy analysis of Centre programs.

B. POLICIES

* Goal setting, balance between objectives.

* Type of response - what, how and who to support.

* Distribution by division, country, region, institution.

* Duration of support.

* Canada - Third World interaction

C. DELIVERY

* Project, program development.

* Review, approval/rejection.

* Finance, administration.

* Evaluation.

* Follow up.

D. ALLOCATION DECISIONS

* Professional staff - area of expertise and location.

* Budget - projects, activities.

* Support staff and program services.

* Operational logistics - office space, recruitment, location, salaries.

Evaluation system. All projects should have a PCR and all divisions are subject to an in-depth review in a regular cycle. Evaluation and policy studies, on the other hand, are undertaken according to need.

Responsibility for the Centre's Evaluation System

OPE is responsible for creating, maintaining and refining the IDRC's evaluation system. Fulfilling this mandate involves:

- Promoting and co-ordinating evaluation work conducted or sponsored by the program divisions.
- Conducting studies itself.
- Serving as a single source of information. This involves deciding which studies would provide information to be entered into the Centre's Evaluation Database System (OPEIS).
- Serving as a repository of reports.
- Building evaluation capacity in developing countries by using LDC consultants whenever possible and appropriate and by organizing evaluation workshops and seminars for Third World evaluators.

Operating Principles for IDRC's Evaluations

In conducting evaluations in IDRC, the following basic principles are emphasized:

- Evaluations are oriented to meeting *user needs.*
- The level of *resources* allocated to *ex-post* evaluation is kept modest. More Centre resources are devoted to *ex-ante* than to *ex-post* evaluation, and a significant proportion of *ex- post* evaluation is done through "*informal*" mechanisms, such as workshops, project visits and staff meetings.
- Evaluations are *non-confrontational*. OPE does not propose, it responds to requests from various levels of management.
- *Perspective* is more important than "*objectivity*". Since, by definition, values cannot be eliminated from evaluation, it is more profitable to make explicit the point of view being sought and to conduct the study accordingly.
- The conduct of evaluation studies by developing country researchers contributes to *building indigenous research evaluation capacity. Also, since the Third World view of the value of a research activity is often deliberately sought by the Centre, the involvement of developing country nationals in evaluation studies is doubly important.*
- The *process* of conducting an evaluation is as important as the product.

Use and Dissemination of Evaluation Reports

To enhance the use of evaluation findings within the Centre, among recipient institutions and the Canadian public, OPE has developed two mechanisms, namely the *OPEIS system and evaluation abstracts*.

The OPEIS system, (the Office of Planning and Evaluation Information System) provides a data base on the following:

- Types of evaluation.
- Evaluation objectives.
- Major areas of study.
- Evaluation summaries and conclusions.
- Evaluation methodology.
- Programming and policy implications.

OPEIS allows IDRC staff to have ready access to evaluation findings on a Centre-wide basis.

Evaluation abstracts are designed to provide the general public and Centre staff with summaries of the study results.

Fig. 15.2 Additional Information about Evaluations

Additional Information about Evaluations

Supporting Documents

Improving the Evaluation System	September 1986
The IDRC Evaluation System	November 1986
Planning System in IDRC	October 1984
Comprehensive Program Evaluation Schedule	
Evaluation Plan Addendum (Tab F - 1984-85 MYOP)	September 1984
Guidelines for Divisional Reviews - Date	December 1983
Memo on IDDR procedures	Dec. 1984/Jan. 1985
Evaluation Procedures	November 1984
The PCR System: A Review	March 1987
Typology for Evaluation Reviews	(P. Eastman - 1984)
Briefing notes on OPE	March 1982
Latest draft on Format of Evaluation Data Base (OPEIS)	March 1985

OPE Conference Papers

W.D. Daniels and T. Dottridge *"Evaluation in the Management of Research"*, August 1988.

J.D.M. Hardie, Sing C. Chew, and W.D. Daniels *"The Role of Evaluation in Planning"*, Canadian Evaluation Society, May 1984.

W.D. Daniels and Sing Chew *"Evaluating National Research Systems and Programs in the Third World - Some Comments", April 1985.*

Sing C. Chew and W. D. Daniels, *"Evaluations in the Third World National Research Systems : Some Trends and Operational Experiences." CES, Toronto, October 1985.*

J.D.M. Hardie, *"Note on the Application of Cost-Benefit Analysis in Evaluating Impact from Reseach "* IFAD, Rome, June 1985

T. Smutylo *"The Evaluation of Externally-Funded Research and Development Projects in Developing Countries" CES, Banff, April 1986.*

Chapter 16

Project Records

The ability to keep good records is a required skill for effective project management. The project manager is responsible for the record keeping function and the records kept should allow the manager to monitor the project activities in order to:

- Assure they are proceeding on schedule.
- Identify trouble spots.
- Record decisions, methodologies, and experiences that could be useful as future references.

The Project File

The project file should be a collection of documents on the planning, organization and control of the project.

The Technical Report

The Memorandum of Grant Conditions (MGC) requires the project manager to complete the Technical Report. It requires a report on progress to date and a comparison with the objectives planned for the reporting period.

Fig. 16.1 Project File

USEFULNESS OF THE PROJECT FILE

1. Serves as a registry of information about the project
2. Serves as a diary about the life of the project
3. Records the amount of time, resources and staff devoted the project objective
4. Serves as a storage medium for analysis and information that may benefit future projects

Fig. 16.2 Technical Report

CONTENTS OF THE TECHNICAL REPORT

1. Goals and objectives of the project.
2. Objectives and activities for the reporting period.
3. Report on progress in the following areas:
    - Special achievements.
    - Special problems or constraints.
    - How and when difficulties were resolved.
    - Modifications and adjustments made.
    - Output and results.
    - Personnel changes.
    - Financial situation.
4. Expectations regarding the next reporting period
    - Specific objectives.
    - Planned activities.
    - Changes or modifications planned.
    - Resource requirements.

The Financial Report

A Financial Report normally accompanies the Technical Report. It itemizes the expenditures incurred during the reporting periods and outlines the budget required for the next period. Details on the Financial Report are discussed in Chapter 19.

The release subsequent payments are conditional upon the receipt of satisfactory Technical and Financial reports. Most of the delays that project managers encounter regarding appropriate payments from IDRC are related to problems with either the Technical or Financial Report. The key to a quick release of project funds is a well prepared and timely report. Although most of the ISD/STI projects require a technical report on an annual basis, project managers should keep a weekly or at least monthly status report. They will then have a running record of the project from which they can easily compile the annual report without having to do it from memory.

The MGC also indicates that the reports should be sent to the Director, Information Sciences Division, with a copy to the responsible program officer.

Communication

As we discussed in an earlier chapter, the quality and quantity of communication is an important factor in the development of an effective project team. It is the project manager's responsibility to communicate information to the right person at the right time. This involves managing communication all along the project manager's network discussed in Chapter 8.

Communication with IDRC is particularly important. The MGC states that consultation with the Centre must take place before making significant modifications to the project plan.

The principal IDRC contact is the responsible Program Officer who handles all matters relating to the project and is responsible to present all project requests to management and the Board. The management, e.g. Division Director, President, and Vice-President, get involved if the question requires authority levels beyond those delegated to the Program Officer.

If the project has to be extended, the Project Manager must send a written request to the Division Director, with a copy to the responsible Program Officer. The request should state the reasons for the delay, what will be accomplished during the extension period and how and when these activities will be carried out. If the time extension requires a reallocation of budget, the revised budget must be attached to the request.

Project Monitoring Visit

The project monitoring visit made by the Program Officer helps IDRC gain firsthand knowledge about the progress and impact of the project and about the operating environment. It also provides an opportunity for the project team and the Program Officer to discuss any important issues that may have arisen. This visit is scheduled once every 12 to 18 months. However, due to financial and human resource constraints, not all monitoring visits occur on schedule. When appropriate, the Division has substituted the Project Monitoring Visit with discussions held at a seminar, a training event or with another IDRC officer other than the responsible Program Officer.

SECTION VII

Financial Administration

Chapter 17

The IDRC Grant Document

Introduction

As its title implies, this chapter addresses several important points recipients should be aware of in connection with the IDRC Grant Document or *Memorandum of Grant Conditions (MGC)* as it is more commonly known.

The chapter consists of two sections. The first deals with the subject in general terms while the second focusses on specific provisions of the agreement with particular emphasis on clauses of interest to institutions working on projects in the field of information sciences.

The chapter does not dwell on the need for the recipient to supply the Centre with an official request for support; nor on the requirement to obtain the approval of the relevant government authorities. The latter requirement is sometimes imposed as the result of the terms of the framework agreement the Centre has concluded with the relevant government. Alternatively, it may simply be the product of a policy decision taken by the government as a condition to the Centre being entitled to fund research in the particular country (the government approval process does not apply to regional or international organizations which are recipients). The important point to note is that for most projects the Centre cannot forward the IDRC Grant Document for signature by the recipient until these two preliminary matters have been effected.

What is an MGC and Why is it Necessary?

In legal terms, an MGC is a contract i.e. a document which reflects an intention on the part of the parties to give rise to legally binding obligations. As such, it is a document that should be read with considerable care.

The MGC is not the exclusive preserve of the Centre. It is a document which is to be used by the Centre and the recipient as a joint tool. The MGC enshrines the understandings reached by the parties. The kernel of the understanding is that the Centre commits itself to funding research by the recipient in exchange for agreement by the recipient to carry out the research in accordance with the terms of the MGC.

One advantage offered by the MGC is that it sets out the rights and obligations of both the Centre and the recipient. As a legal document, it also offers a high degree of certainty that enables the Centre and the recipient to plan their operations more effectively over the life of the project.

Another advantage of the MGC is that it gives rise to significant practical considerations. For instance, no project funds can be granted by the Centre in the absence of the recipient's signature appearing on the MGC. Incidentally, signature of the MGC is to be distinguished from the Centre's internal approval system i.e. a project submitted by a potential recipient may have been approved by, for instance, the Centre's Board of Governors. But, until the project has been translated into contractual terms via the MGC and the contract has been signed, the project has not yet come into existence. It is for this reason that the Centre cannot make funds available prior to signature.

As previously noted, the MGC is subject to a framework agreement concluded between the Centre and the relevant government of the state in which the recipient institution is located. These agreements reflect the willingness of the local government to allow the Centre to fund research subject to certain conditions being fulfilled. They also establish important principles such as the exemption from custom duties and taxes in respect of equipment to be used in projects.

Specific Provisions of the MGC

Identity of the Recipient

The Centre only contracts with institutions, not with individuals. The first question to be settled is the identity of the recipient. In most cases this does not pose a problem. However, there are some legal technicalities that first need to be satisfied. Unless the institution is a government department, university, regional or international organization, the Centre requires evidence certifying the recipient's legal status. This is necessary to avoid the possibility that the Centre could enter into contract with an entity that does not exist in juridical terms.

When the project is funding a network or a number of institutions the key here is to identify which institution will contract with the Centre on behalf of the other institutions involved. The choice of the recipient has important legal consequences. For instance, the recipient is responsible to the Centre for ensuring that the contract is implemented in accordance with its terms. This may require the recipient to enter into subsidiary agreements with the other institutions involved to ensure that they will enable the recipient to carry out its legal obligations vis-à-vis the Centre. In the unlikely event of a dispute, the Centre would turn to the recipient to seek redress. This is the case even when the actual practical work is being undertaken by another institution or the project leader is not an employee or agent of the recipient institution. The important point to note is that the legal relationship is solely with the recipient. Hence, it is the recipient's responsibility to ensure that the project leader or research institutions act in accordance with the terms of the MGC. One final point. It is important that the contract be signed by a person who has the legal authority to commit the recipient.

Parliament of Canada

The continued legal efficacy of the contract is subject to a number of conditions being satisfied. One of the major conditions is stated early in the text: that sufficient funds are made available to the Centre by the Parliament of Canada during the full course of the grant.

Administration of the Grant

This portion of the agreement is largely self-explanatory. It sets out the initial payment to be made by the Centre and refers to subsequent installments in terms of a separate schedule which is annexed to the agreement. A number of points can, nonetheless, be made.

With respect to those projects where there is more than one recipient, funds cannot be made available to any one recipient until all recipients have signed their respective contracts with the Centre. Additionally, the payments made by the Centre are subject to the recipient supplying technical reports and financial statements (normally every twelve months).

Another important point is that the grant is always valued in Canadian dollars. This sum reflects the maximum commitment the Centre is exposed to.

Specific Clauses

Clause 1: Components and Objectives of Project

Having dealt with the preliminary provisions in the MGC agreement, we can now focus on the specific clauses that are likely to be of interest to recipients.

The first clause to be addressed is that of setting out the objectives of the research project. This is an important provision as it is the only clause which deals with the nature of the work to be accomplished by the recipient. Accordingly, it sets out the gambit of the project by delineating the boundaries of the field of research.

In many research agreements, parties prefer to inject considerable detail to ensure that the subject of the agreement is clear to all parties. We have taken a different approach preferring to keep things simple. Nonetheless, particular care should be exercised when drafting the objectives of the project. They should be expressed in language that is understandable to the average intelligent human being.

The objectives take on added importance when the project is designed to produce a product ie. software. The product, together with the technical reports will provide the basis upon which an assessment will be made as to whether the contract has been carried out successfully.

Clause 2: The Grant Budget

This provision places a legal obligation on the recipient to spend the funds in accordance with an agreed upon budget (which is an integral part of the agreement). Note that the obligation is not to adhere in all minute respects to the budget. The word "*approximately*" is important in this context. Minor deviations from the budget are permitted with the result that only substantial changes from budgetary allocations require the prior approval of the Centre. In this way the Centre endeavours to strike a balance between exercising prudent control and recognizing the practical exigencies whereby recipients should be allowed to make decisions that take account of changes that have arisen.

Clause 3: Periodic Technical Reports and Financial Statements

Recipients are under legal obligation to submit periodic technical reports and financial statements (normally every twelve months) as a condition for receiving subsequent instalments.

The adjective "*satisfactory*" is used in the schedule. Accordingly, the Centre is legally entitled to determine the quality of the reports before subsequent payments may be made.

The contract does not stipulate that the funds are to be given on a fixed fee basis. Installments are to be related to the actual cash requirements of the recipients defined by the financial statements and forecasts. Accordingly, the instalments may be less (or higher) than the sums mentioned in the schedule. Any unused funds must, at the end of the project, be handed back to the Centre.

In keeping with most contracts of this nature, the agreement also stipulates that the final instalment is to be held back until the Centre has had an opportunity to determine whether the final financial and technical reports are satisfactory.

Clause 5: Disclaimer

The point of this provision is to make it absolutely clear that the Centre and the recipient are operating at arm's length as two distinct entities. Otherwise, it might be argued that the recipient is acting as an agent of the Centre. This could entail the Centre becoming vicariously liable for the actions of the recipient or, as a corollary, the recipient having the authority to commit the Centre to a contract. Clearly, this is not what the parties intend.

The Centre's potential legal exposure is limited to any damage which may have resulted from the negligent acts of the Centre's employees or agents acting within the scope of their authority.

Clause 7:Importation

This clause achieves two objectives. First, it places an obligation on the recipient to be responsible for the arrangements relating to importation of project equipment.

Second, it restrains the recipient from using grant funds to pay for taxes or custom duties levied on such goods or equipment.

Normally, this should not pose a problem. The Centre has agreements with many countries under which they exempt equipment or goods, destined to be used for Centre projects, from taxation or customs duties.

Clause 8: Maintenance and Insurance of Equipment

It is a fundamental term of the contract that all equipment purchased with Centre funds belongs to the recipient. The recipient must seek the prior consent of the Centre before selling or disposing of this equipment during the course of the project.

The insurance dimension of the provision deserves mention. It states that if the recipient insures their own equipment, they must do the same for equipment purchased with Centre funds. If the recipient does not purchase insurance for its own equipment it is not under an obligation to create a special insurance regime for equipment falling within the ambit of the project.

If the equipment is lost or destroyed and is not insured, the Centre is not legally obliged to make up the loss.

Clause 13: Dissemination of Results

Two principal ideas run through this provision. First, the recipient is under an obligation to acknowledge the Centre's contribution when publishing any results of the project.

Second, the recipient is the owner of the results and, hence, has an unfettered right to publish them. At the same time the Centre has a broad licence to publish or disseminate the results as well.

An additional obligation is imposed upon the Centre. In the event the recipient is not in agreement with the Centre's wish to have the results published, the Centre is under a legal obligation to give serious consideration to the recipient's views. This right to publish or disseminate is very broad. It includes not only the results of the projects but also "*any other information prepared or produced*" as a result of the grant.

Clause 14: Local Contributions

This is self-explanatory and is part of the consideration that the recipient brings to the contract in exchange for which the Centre provides the grant funds.

Ethics Clauses

The Centre places considerable emphasis on the question of adhering to sound ethical principles. Accordingly, appropriate clauses are inserted into MGCs to cover, for instance, surveys undertaken or physically invasive methodologies being applied. In the case of projects in the Information Sciences area however, ethical principles often referred to in MGC's dealing with other fields of study seem less relevant.

Clause 16: Computer Software

With respect to contracts dealing with projects in hard technology fields, the Centre includes a patent regime in the MGC. This addresses the question of ownership and utilization of the project results that may be protected by proprietary rights.

In the case of Information Sciences projects, a special regime has been crafted to cover computer software. This regime gives both the Centre and the recipient joint ownership rights. This provision is only used in the event that the Centre believes it may want access to the software to disseminate it to other entities. The proprietary protection addressed by the regime is primarily concerned about copyright but it could also include patents where patent protection is available for software (this is not the case in Canada).

The important point is that the regime does not undermine the capacity of the recipient to make use of the software. It has a very broad, unrestricted licence to use the software itself or allow others to do so.

Another significant point is that the recipient is under an obligation to ensure that its employees will enable the recipient to adhere to the terms of the regime. This is to prevent an employee from claiming copyright at the expense of the recipient (its employer) or the Centre. It cannot be over stressed that ownership of the proprietary rights does not reside in an individual but in the recipient (and the Centre).

Clause 17 - Availability of Grant

This is an important provision as it determines the duration of the grant. The commencement date has a special significance. Three alternatives are available. The first is that the grant is available from the date of acceptance i.e. signature by the recipient (in the event that no commencement date is stated in the MGC).

Second, an actual commencement date may be specified in the agreement.

Third, a commencement date may be mutually agreed upon by the Centre and the recipient. A further small point should be noted. In the case of projects involving more than one recipient, the commencement date is also contingent upon the other contracting parties signing the MGCs.

The funds are available until the completion date. This is the date by which all research activities should have been completed, excluding the preparation of the final technical and financial reports. The date is either set out in the provision or it can be inferred from its terms.

Survival of Specific Clauses

Despite a project having terminated, certain provisions of the MGC continue to survive. These would include, for instance, the dissemination section as well as the provision in respect of software.

Conclusion

To sum up, the Centre perceives the MGC as an important document. Not only does it clarify the rights and obligations of the recipient and IDRC, it also injects a sense of certainty over the lifetime of a project. It is a tool to be used as a frame of reference by the Centre and the recipient. It also constitutes the formal link around which the parties interface.

Chapter 18

Principles of Financial Administration

In order to understand the interaction between the budget provided by a donor such as IDRC and the budget of the host institution, it is necessary to have a grasp of the principles of financial administration. This chapter aims to place the whole issue of finance and budgeting in perspective by first highlighting some problems using a case study of a fictitious project and then indicating some solution. Only by understanding the wider constraints upon an institution and the operation of core budget will a project manager be able to appreciate the difficulties of relating these problems internally to the recipient organization and externally to the donor.

A Case Study

The Institute for Training and Development is organized on a project basis. Each Program Director is a project manager. His\her job is to manage a number of projects in order to meet a contribution quota which is set each year and which is the same for all six Program Directors. Contribution is defined as revenue minus expenses. The contribution is calculated so that project contributions will cover fixed costs and the Institute will break even.

Therefore, each Program Director is responsible for making a contribution to the bottom line of the Institute. This contribution is carefully tracked and measured throughout the year since the Institute lives or dies by the ability of each Program Director to meet quotas.

Within this context let us focus on a specific incident which illustrates how the Institute's Executive Director and the Project Managers are inclined to view things from different perspectives.

One of the Program Directors, Dr. Matata, manages a project in the Caribbean which involves seven different islands and about 100 different contributors. Managing the project involves frequent communication with the people in this network. Part way through the project it became obvious that having a fax machine at the Institute would facilitate things. Many of the participants had fax machines or access to one. Since the purchase of a fax machine had not been budgeted for in the project proposal, Dr. Matata approached the Executive Director with this expenditure request.

The Executive Director's reply was, "*Go ahead - providing the machine is purchased out of project funds.*" As we will see later, this is a logical reply and one which we could anticipate given the Executive Director's interest in keeping the Institute's fixed costs as low as possible.

Dr. Matata, after analyzing his project expenditures, realized that the money currently being paid to a courier company to send fax messages would be enough to make a monthly payment on a fax machine if one was installed at the Institute.

And so the issue was resolved - the fax machine was purchased without increasing the administrative or overhead costs of the institute and Dr. Matata could justify the purchase of the machine out of the project budget.

However, as soon as the fax machine was installed, the other Program Directors realized that it could be a great help to them as well. Soon the machine was being used by everybody in the organization.

From Dr. Matata's viewpoint, the method of financing the fax machine was no longer fair. His objective, of course, is to accomplish as much as he can given a limited project budget. The less he has to pay for administrative costs such as purchase of a fax machine, the more resources he can direct toward the project goal. "*Why then*", he thought, "*am I paying for the fax machine when it is being used by the Institute as a whole?*"

Whereupon he again approached the Executive Director with this problem. Again the Executive Director was prepared to listen and agree to any financing plan that would not increase the fixed or overhead costs of the Institute. Together they agreed that Dr. Matata's project would pay a fixed fee each month toward the purchase and that each Program Director would pay a user fee of $1.50 per page. This formula would stay in effect until the fax machine was paid for.

The new formula successfully spread the costs of the acquisition among all the "*user*" projects within the Institute and seemed satisfactory. That is until another Program Director, motivated to maximize his own project resources, discovered that a communication company close by would send fax messages at $1.00 per page. Of course he began to use this service in spite of the fact that there was a machine now located at the Institute.

Once the Executive Director realized what was happening, he adjusted the formula to match the commercial rate of $1.00 per page. His interest was in the Institution itself and in providing good service to the Program Directors. He was interested in building additional capacity within the Institute. Given the situation, he obviously had to act to assure that the Program Directors, in their pursuit of project goals, were also helping the Institute as a whole meet its goals.

Conflicting Objectives

The case illustrates how the objectives of an individual Project Manager and those of a Executive Director may differ - and in fact may be in conflict. In a healthy institution this basic conflict between the Executive Director and the Project Managers is one which is out in the open, talked about, negotiated and resolved to the benefit of both parties.

In order to understand this conflict more fully, it is necessary to understand the financial model of the organization and the steps that the Executive Director must work through in order to produce a budget for the institute. We will do this by working through a planning and budgeting case study. It is presented using a six step process as follows:

- Step 1: Creating a Financial Model of the Agency.
- Step 2: Relating Mission, Objectives, and Strategies to Activity Level.
- Step 3: Converting Activity Level to an Agency Overhead Budget.
- Step 4: Integrating the Institution's Overhead Budget into the Program Budget.
- Step 5: Setting Price Levels.
- Step 6: Completion of the Budget.

Remember that we are writing this chapter from the perspective of the Executive Director. In that way we hope to gain some understanding of the way he views financial administration in order to shed light on some of the issues raised in the case presented above.

Step 1 - Creating the Financial Model of the Organization

A financial model identifies the financial variables and clarifies their relationships so as to create a predictive financial model.

Just as a commercial enterprise, your host institution has costs and receives revenue. While your institution may be similar to those of the commercial enterprise in that regard, there are important differences.

The financial model for the non-profit institution will now be created a step at a time by first introducing each of the three financial variables and then by showing how they interrelate. The result will be a financial model which will illustrate how your institution prepares an operating budget. We will then use this model to better understand the perspective of the Executive Director and the Project Manager within the institution.

Financial Variable #1: Core Expenses

Non-profit institutions are stewards. In the process of discharging their responsibilities they incur "*in-house*" expenses. These are administrative overheads but often referred to as core expenses.

In the short term, say one year, core expenses tend to remain unchanged no matter what activity level applies. For this reason, they are also called fixed expenses.

An example of a core expense is rent. Rent expenses have no relationship to the institution's activity level in the short run. A similar case can be made for other overhead expenses such as staff salaries, utility expenses, insurance premiums, property taxes, depreciation of equipment and so on.

Financial Variable #2: Program Direct Expenses

Program direct expenses are related directly to the projects and programs of the institution. They normally vary with activity level and are often called variable expenses.

To illustrate the meaning of core expenses and program direct expenses, consider a hypothetical institution whose mission is to increase general public awareness of the need to protect the environment. To do this, the institution is attempting to create an expanding network of members who have concerns about increasing threats to the environment. For this budget year, the institute plans to organize an international seminar for member organizations and distribute eight issues of a newsletter.

Figure 18.1 identifies the estimated core expenses for the budget year.

Fig. 18.1 Core Expenses

Expense Item	Amount
Salaries and benefits	$189,500.00
Office Rent and Salaries	26,180.00
Automobile Expenses	2,500.00
Insurance	1,500.00
Legal and Audit Fees	2,800.00
Property Taxes	670.00
Depreciation	1,200.00
Total	$224,350.00

Fig. 18.2 Program Direct Expenses

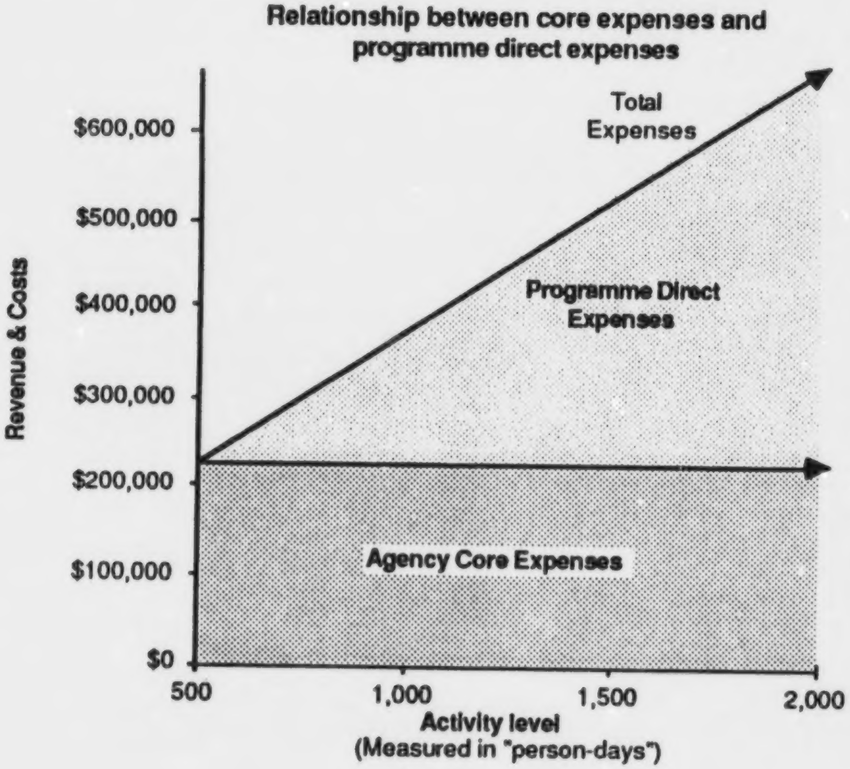
Expense Item	Amount
Participants Travel	$105,000.00
Accommodation and Board	50,000.00
Hire of Conference Facilities	10,000.00
Simultaneous Interpretation Services	15,000.00
Subtotal	$180,000.00
Environmental Concerns Newsletter	
Producing and distributing eight issues @ $8,600.00 each	$ 69,200.00
Total	$249,200.00

Figure 18.2 identifies the program direct expenses which include the cost of holding the seminar and productivity

The relationship between core expenses and program direct expenses is illustrated in the following diagram.

Core expenses are shown as a horizontal line since the same expenses are incurred regardless

Fig. 18.3



of activity level. Program direct expenses, on the other hand, increase as the activity level increases. As more projects are undertaken, related program direct expenses increase.

Note that program direct expenses are added to core expenses at each activity level to produce total expenses. At zero activity level, total expenses are equal to core expenses.

Financial Variable #3: Revenue

While a close parallel can be drawn between the commercial enterprise's fixed and variable expenses and a non-profit institution's core and program direct expenses, the parallel ends with the introduction of revenue. For a commercial enterprise there is always a direct relationship between activity levels and revenue. If no sales are made, revenue is zero. As activity (sales) increases, more revenue is generated. For a commercial enterprise the revenue line on the diagram would look like it does in Fig. 18.4.

The slope of the revenue line will depend on the price of the product. With a higher price, the slope of the line will be steeper.

Revenue for the non-profit institution is different. Often non- profit institutions receive funds for administrative support - funds that are

Fig. 18.4

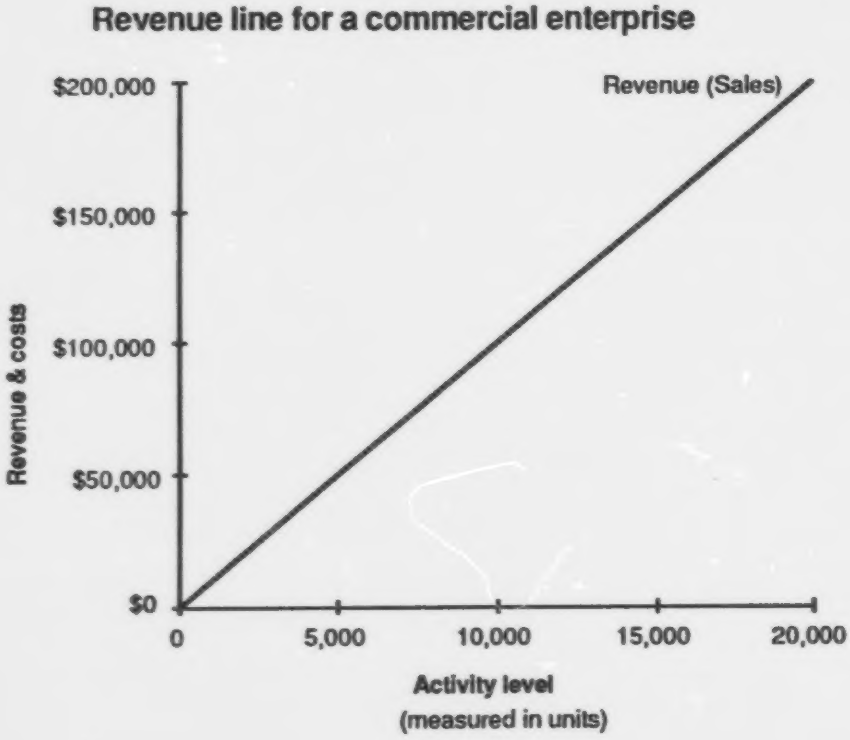
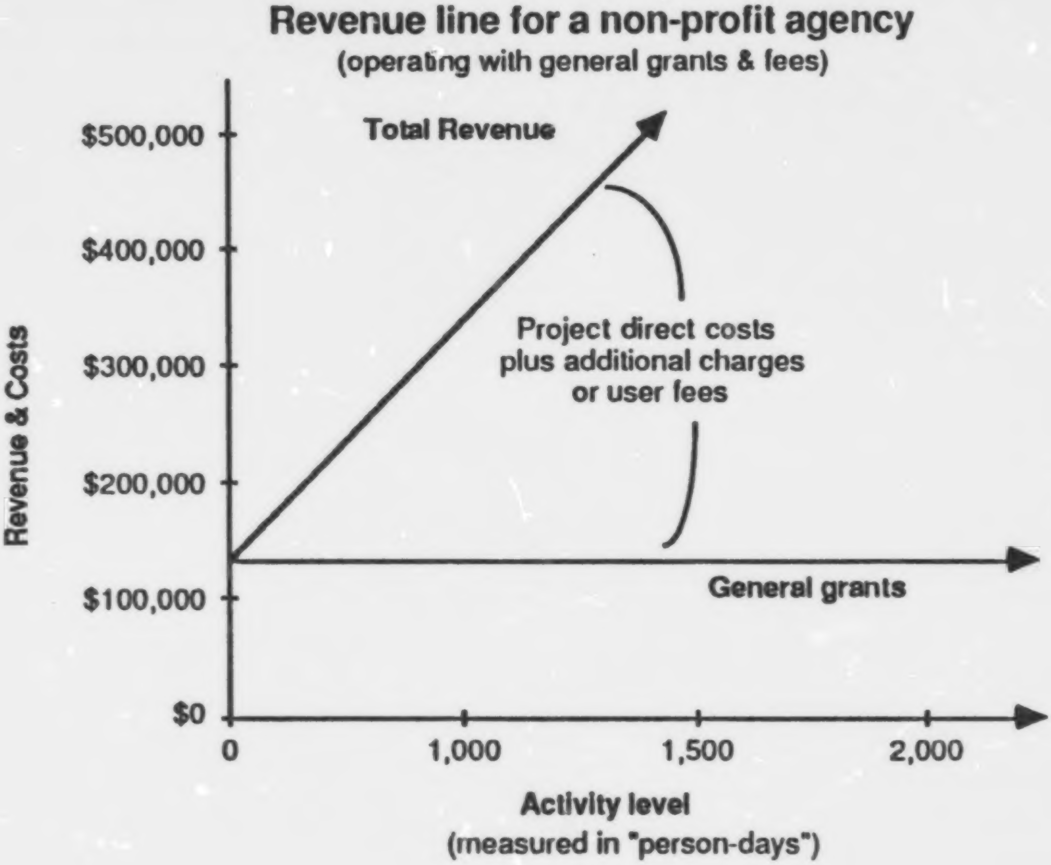


Fig. 18.5



not tied to specific projects. These funds are referred to as general grants. For a non-profit institution that finances all core expenses from grants, the revenue line on the diagram looks like the one illustrated in Fig. 18.5.

In many instances, however, non-profit institutions are unable to cover their core expenses from general grants alone. When such a shortfall exits, the institution must either negotiate with the funding agencies to obtain funds to cover program direct expenses or alternatively, charge a user fee for some services. For a non-profit institution that operates with general grants plus additional charges or user fees, the revenue line on the diagram looks like that in Fig. 18.5.

Fig. 18.6

Completing the Model

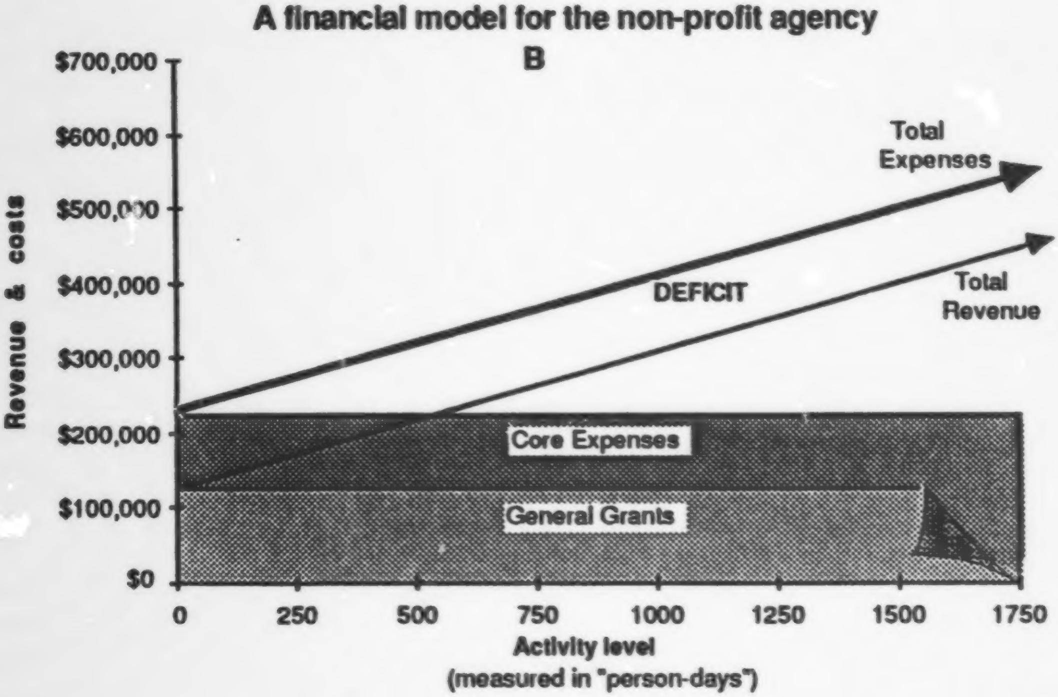
The financial model for the non-profit institution can now be completed.

Core expenses are $224,350.00 and program direct expenses $249,200.00.

Assuming a situation where a general grant of $125,000.00 has already been secured, it is still necessary for the institution to generate revenue over and above that needed to cover program direct expenses. Provided these additional charges can be negotiated, the completed diagram will look like "*A*" in Fig. 18.6.

If the institution is unsuccessful and is only able to negotiate additional revenue to cover

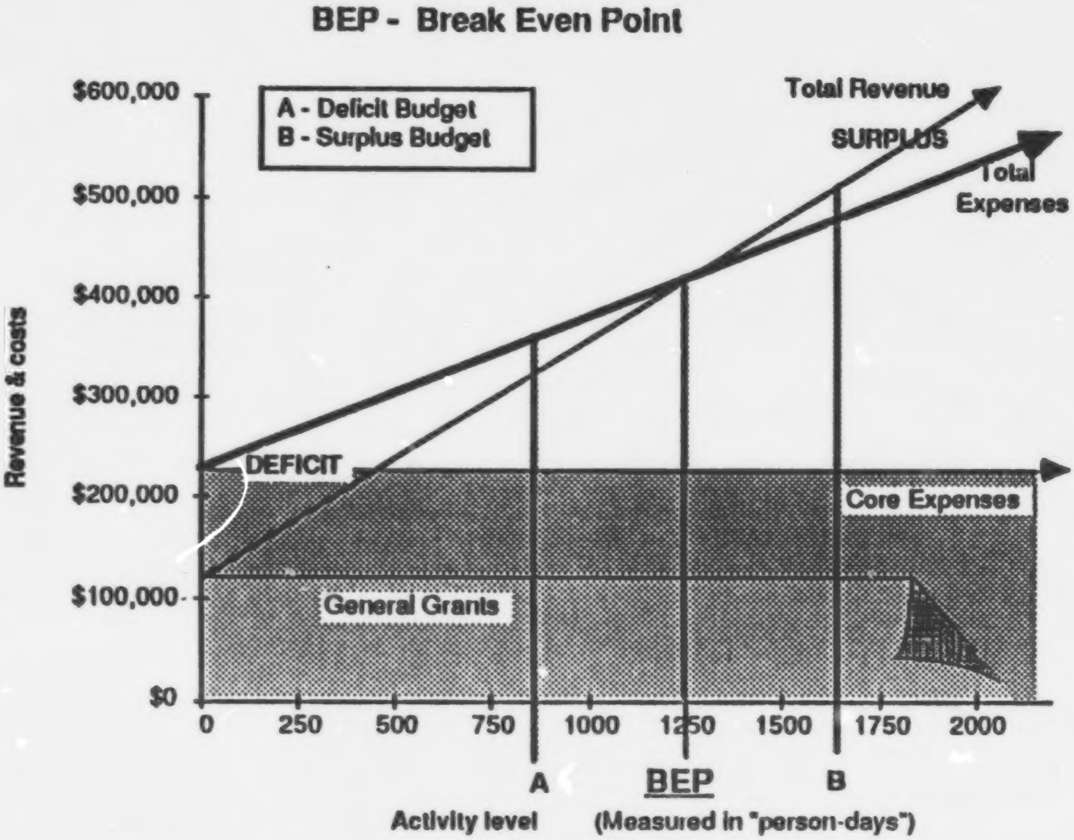
Fig. 18.7



program direct expenses, the completed diagram will look like "*B*" *in Fig. 18.7.*

In "*B*" the institution has a shortfall of $99,350.00 regardless of activity level.. This is because the general grant of $125,000.00 is not large enough to cover the core expenses of $224,350.00.The institution is able only to negotiate additional revenue to cover program direct expenses. Hence the shortfall.

Fig. 18.8



If, on the other hand, the institution is able to negotiate an extra charge over and above program direct expenses, the situation illustrated in "*A*" will result. Provided the activity level is high enough, the institution will break even or generate a surplus.

Suppose the circumstances depicted in "*B*" prevail. The institution must raise money if it is to implement the planned program. There are the following alternatives:

- Finance the deficit from past savings.
- Raise an administrative charge of 40% on program direct expenses 249,200.00 X 40% = $99,350.00).
- Ask the seminar participants to subsidize the costs by paying a registration fee, partial cost of accommodation, etc.

The institution will probably use a combination of all these methods to raise the necessary funds. If it is successful, then the scenario depicted in diagram "*A*" applies.

Break-Even Analysis

To encourage non-profit agencies to plan and utilize their full capacity, funding agencies often insist on financing core expenses as a proportion of total project costs. Where an institution's funding is completely tied to project activity, the optimum level of activity is often that which will enable the institution to recoup enough funds to just cover core expenses. Their position is illustrated in Fig. 18.8 at the break-even point (BEP).

It is important to note that for an institution which receives both general and specific grants, with or without a charge, the break-even point has no bearing on the optimum activity level. The core expenses may already be covered even if no activity takes place. We have to use the project approach or other means to determine the optimum activity level. The break-even point should, however, always be identified because it marks the point of departure from a deficit budget to a surplus budget.

Step 2: Relating Mission, Objectives and Strategies to Activity Level

How does Activity Level Relate?

The Executive must ensure that the institution is very clear about its mission before the planning process begins. Planning will start with setting goals and objectives and devising strategies to achieve them. Available resources will be reviewed in the light of desired objectives and this will involve balancing one against the other until a realistic combination is achieved. This is the process that the Executive Director will use to set a suitable activity level.

How do we Project a Desirable Activity Level?

We discussed in detail in Step 1 how the Executive Director is interested in studying the revenues and costs under different circumstances in order to determine the optimum activity level and the point of departure or the break-even point.

Forecasting the future requires knowledge of the past and present. The best source of information regarding the current financial status of the institution can be found in the most recent financial statements. From these the Executive Director can construct a financial model which will help him to forecast revenues and expenses for various levels of future activity.

Using the Model to Budget

In the simplest case, the Executive Director can now obtain readings for total revenue, program direct expenses, core expenses and surplus (or deficit) directly from the chart simply by deciding the activity level for the next budget year. Provided there is little change from year-to-year, this may be appropriate.

In many cases, however, some financial variables will change along with the new activity level. The challenge facing the Executive Director is to identify how the financial variables interrelate at the chosen activity level. *The key to this is for him to identify a level of operating revenue which, when combined with core and program direct expenses, and revenue from general grants, will yield a desired or planned level of surplus.*

To see how this is done, follow each step as the model is revised for the budget year.

1. Core Expenses Increase

Two full-time program staff are hired, moving the activity level to 1,520 "*person days*" and increasing salary expense (core expense) by $40,000. The core cost curve increases by $40,000 at an activity level of 1,520 "*person days.*"

2. Revenue from General Grants Decreases

The funding institution decides to reduce its grant from $125,000 to $100,000. The revenue from this grant is not tied to a particular project.

3. Program Direct Expenses.

Program direct expenses grow at a constant rate. This assumes that the program mix is unchanged. To calculate program direct expense at an activity level of 1,520 person days, follow this procedure:

- (i) Calculate program direct expense per person day at 1,320 person days. (Program direct expense of $249,200 divided by 1,320 + $188.80).
- (ii) Calculate the increase in person days in order to attain the budgeted activity level. (1,520 days - 1,320 days = 200).
- (iii) Calculate additional program direct expense. (200 person days X direct expense per person day of $188.80 + $37,760).
- (iv) Calculate program direct expenses at 1,520 person days (249,200 + $37,760 = $286,960).

4. Operating Revenue Increases

Finally, it is possible for the Executive Director to determine the amount of operating revenue required. Since the expense structure and the level of core funding is given, budgeting the appropriate level of operating revenue is critical if the objective is to achieve a particular level of surplus. In this example, the surplus objective is $30,000 for the year.

By taking readings at an activity level of 1,520 person days, the following budget variables can now be determined: (See Fig. 18.9 and 18.10)

Fig. 18.9

Budget Variables

- Core Expenses $264.350

  Core expenses are assumed fixed in the short term.

- Program Direct Expenses $286,976

  Program Direct Expenses are the direct expenses of project of the non-profit. No overhead: expenses are included.

- Revenue (General Grants) $100,000

  The core funding of the non-profit. No revenue from projects is included.

- Revenue (Operating) $481,326

  The revenue from projects or all other sources other than core funding.

- Surplus

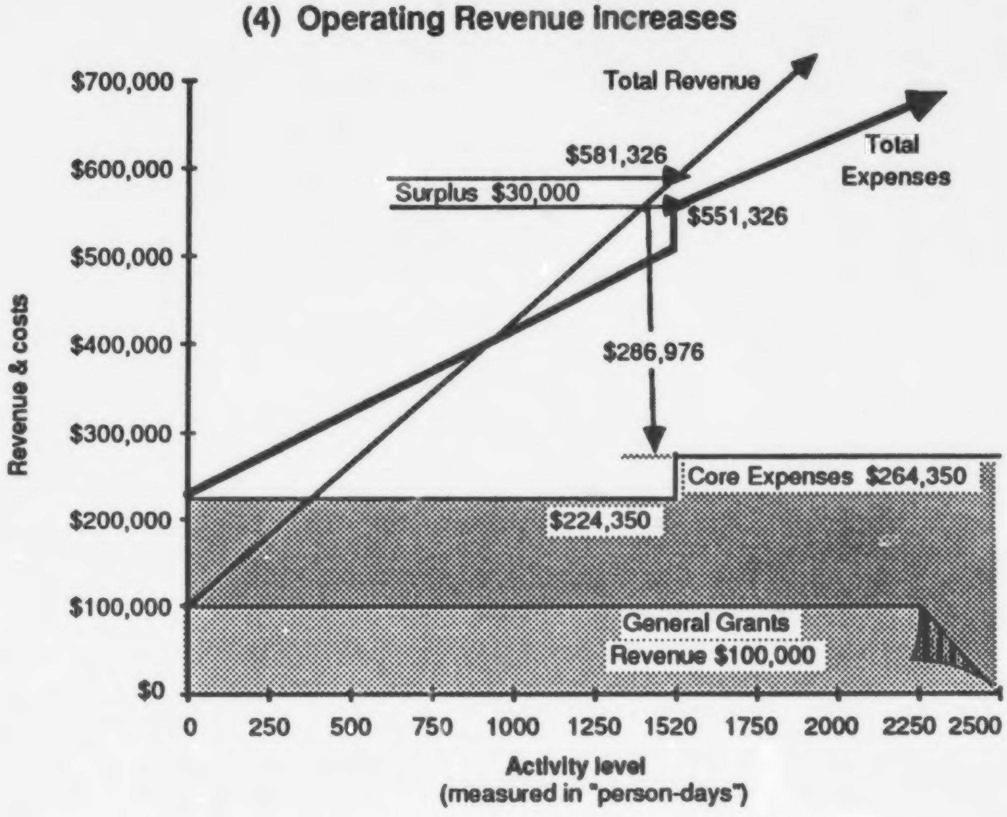
  The excess of revenue over total expenses.

What the Executive Director should discover from this exercise is that operating revenue must be $481,326 in order to achieve the objective of a $30,000 surplus. By setting the level of core and program direct expenses, and then determining the level of core funding, the Executive Director can use the model to determine how much operating revenue he requires to reach the financial target.

Whether a target of $581,326 is feasible is yet another question that the Executive Director must be concerned with.

We will deal with it further under Step 5, Setting price Levels.

Fig. 18.10


(4) Operating Revenue Increases
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
Revenue & costs
Total Revenue
Total
Expenses
$581,326
Surplus $30,000
$551,326
$286,976
Core Expenses $264,350
$224,350
General Grants
Revenue $100,000
0
250
500
750
1000
1250
1520
1750
2000
2250
2500
Activity level
(measured in "person-days")

Step 3: Converting Activity Level to an Agency Overhead Budget

Detailed Budgeting of Overhead Expenses

The financial model of the institution already sets out a level for core expenses. To prepare a line-item budget, however, the Executive Director must examine each overhead expense item in greater detail. The results of the analysis will either confirm the amount that is used in the model or alternatively, enable the Executive Director to reach a more accurate forecast of core expenses. This forecast can be used to revise the model.

A spreadsheet can be used to complete the analysis of the overhead expense budget:

Step 4: Integrating the Agency Overhead Budget and the Program Budget.

The Rationale for Cost Recovery

The Executive Director is concerned with the objectives of the institution as a whole. He is concerned with rendering a service and still breaking even financially.

The cost of the service is called program direct expense. The institution's cost of delivery is called the core expense. The Executive Director

Fig. 18.11 Overhead Expense Budget Analysis

OVERHEAD EXPENSE BUDGET ANALYSIS

OVERHEAD DESCRIPTION	LAST YEAR ACTUAL	POSITIVE OR NEGATIVE RATIONALE	BUDGET
Advertising	$1,800	add $300 to support new staff level	$2,100
Automobile	2,500		2,500
Delivery	1,800		1,800
Depreciation	1,200		1,200
Dues & Licenses	800		800
Insurance	1,500		1,500
Interest	1,800	reduce $600 - loan paid off	1,200
Legal & Audit	2,800		2,800
Other	800		800
Property Tax	670		670
Repair and Maintenance	450		450
Rent	4,680		4,680
Salaries & Benefits	189,500	add two professional staff @ $40,000	229,500
Supplies	1,200	add $300 to support new staff level	1,500
Telephone	7,050		7,050
Travel	4,200		4,200
Utilities	1,600		1,600
TOTAL	$224,350		$264,350

Fig. 18.12 Distributing Overheads

OVERHEAD DISTRIBUTION SHEET

OVERHEAD DESCRIPTION	TOTAL ADMIN.	SUPPORT CENTRE					PROGRAM				
		A EXEC.	B DATA PROC.	C BLDG.	D	E	EDUC.	COUNS.	MEDIA		
Advertising	$2,100	-	-	-			600	700	800		
Automobile	2,500	2,500	-	-			-	-	-		
Delivery	1,800	400	500	-			300	300	300		
Depreciation	1,200	-	600	600			-	-	-		
Dues & Licenses	800	200	-	-			200	200	200		
Insurance	1,500	-	750	750			-	-	-		
Interest	1,200	-	600	600			-	-	-		
Legal & Audit	2,800	2,800	-	-			-	-	-		
Other	800	400	-	-			200	200	-		
Property Tax	670	-	-	670			-	-	-		
Repair and Maintenance	450	-	200	250			-	-	-		
Rent	4,680	-	••	3,680			250	250	500		
Salaries & Benefits	229,500	50,000	25,000	20,000			40,000	54,500	40,000		
Supplies	1,500	750	750	-			-	-	-		
Telephone	7,050	2,000	2,000	-			1,000	1,000	1,050		
Travel	4,200	1,200	-	-			1,000	500	1,500		
Utilities	1,600	300	300	300			200	200	300		
DISTRIBUTION TOTAL	$264,350	$60,550	$30,700	$26,850			$43,750	$57,850	$44,650		
A. EXEC. ADMIN.		(60,550)	10,000	5,550			15,000	15,000	15,000		
B. DATA PROC.			(40,700)	10,700			10,000	15,000	5,000		
C. BLDG.				(43,100)			23,100	10,000	10,000		
D.											
E.											
ALLOCATION TOTAL							$91 850	$97 850	$74 650		

is responsible to assure that there are sufficient funds to cover all the costs over the long term. A deficit in a given year should only be allowed if it can be covered by past savings or anticipated future surplus. Without either, a deficit should not be incurred. Persistent deficits may cause the demise of the institution.

The actual cost of a service is not just the program direct expense but both the direct costs and the cost of delivery. The Executive Director is interested in the total cost of each project because this knowledge will help him establish the "*price*" that has to be paid.

Deciding on the user fee or the additional amount to add to a contract for institution overhead is a pricing decision just as it is for the commercial enterprise. Surprisingly, many nonprofit agencies, and even the funding agencies that support them, prefer not to think of "*pricing*". However, if an institution recoups part or all of its core expenses in this way, it will have to get involved in pricing or cost recovery, user charges, professional fees, fees for service etc.

Establishing a realistic "*price*" for project outputs requires a thorough knowledge of each cost element and an allocation procedure which requires that each project bears a fair portion of institution overhead expenses. This is the only way that the Executive Director can be assured of covering all costs and keep the institution viable.

Thus we see that the Executive Director looks at costs primarily as being overheads + program direct expenses. The project manager has a more narrow focus. His job is to manage the program direct expenses to the best of his ability. This basic difference in terms of what costs are relevant to whom causes discussions similar to those described in the opening case.

Determining the Cost of Programs

We shall use the overhead budget developed in Step 3 to demonstrate how the Executive Director goes about allocating overhead expenses to specific projects or program categories. We are assuming that the institution operates within three major programs areas: Education, Counselling and Media. Within each of these areas there may be several different projects but we shall confine our analysis to the program category level.

To allocate overhead costs, an overhead distribution sheet is set up as in the example on the next page. The Executive Director then uses the form to allocate all overhead costs to programs. The following steps are used to complete the form:

Step A. Establish support Centres and Program Titles

The Support Centres are introduced to make it easier to allocate particular overhead items to these categories first rather than making the allocation directly to programs. The Support Centres used here are: Executive Administration, Data Processing and Building.

The Support Centres are ranked in terms of the relative amount of support they provide to other centres. In our example, more Executive Administration goes into Data Processing than, say Data Processing goes into Executive Administration. The same logic applies to ranking Data Processing ahead of Building. The ranking exercise is not necessary if the Support Centres involved appear not to have any particular ordering.

Step B. Record Agency Core Expenses or Overhead

All the institution's core expenses are recorded from the current year's budget. The Executive Director must ensure that Program Direct Expenses are not included and that no other overhead costs such as depreciation are overlooked. Except for Program Direct Expenses, all other costs must be included.

Step C. Allocate Agency Core Expense to Support Centre and Programs

Using a little imagination, the Executive Director can allocate these costs to each Support

Centre and Program. Where possible expenses are allocated directly to the program category. Consider these examples:

Salaries and benefits for $229,500 are distributed according to the way each staff member spends his time. For example, $50,000 representing the Executive Director's salary, goes to Executive Administration; $25,000 representing the salary of two computer operators goes to Data Processing; $20,000 representing the salary of a janitor and maintenance person goes to Building; and $40,000, $54,500 and $40,000 representing the salaries of program staff go to the respective program areas. Advertising is allocated to each of the three programs according to actual costs incurred. And so on.

When the allocations have been completed, the Executive Director can then total each column representing a Support Centre or Program to arrive at the Distribution Totals.

Step D. Allocate Support Centre Agency Core Expense Costs to Programs

At this point Agency Core Expenses have been allocated, but not all to programs.

Next, Support Centre descriptions are written in the left-hand bottom portion of the sheet in the same order that they appear across the top.

For each Support Centre, the amount of Agency Core Expense initially assigned is re-allocated.

In the example, $60,550 of Executive Administration expenses have to be re-allocated (Step 1). The method may seem arbitrary but there are some reasonable guides. For instance, the number of persons working in each remaining Support Centre and Program area might be used as the basis for the re-allocation of Executive Administration.

Notice that $10,000 is re-allocated to Data Processing which in turn increases the amount of Data Processing expense that has to be re-allocated to $40,700 (Step 2). Again, this re-allocation is done on a reasonable basis, for instance, the amount of data processing time devoted to each remaining Support Centre and Program area.

Finally, $43,100 of Building expenses have to be re-allocated. This is done on the basis of the number of square feet of building devoted to each program (Step 3).

When all support centre distribution totals have been re-allocated to programs, the procedure is complete.

$91,850, $97,850, and 74,650 is the amount of institution overhead expenses allocated to Education, Counselling and Media respectively.

Fig. 18.13 Total Cost of Programs

	Education	Counselling	Media
Program Direct Expenses	99,294	24,106	163.576
Overhead Expenses	91,850	97,850	74,650

The Executive Director can then determine the total cost of each program by adding the program direct expenses to each of these totals.

Arriving at the total cost of each project should be relatively straightforward if proper records are kept. Since program direct expenses are costs that can be identified with specific projects, the accounting records will provide the totals from the previous year.

The financial model developed earlier indicates the total project direct expenses for all projects is $249,200. Accounting records also provide the following breakdown of these expenses: $86,200 for Education, $21,000 for Counselling, and $142,000 for Media. From the financial model, it can be determined that program direct expenses for the budget year are $286,976. If a similar percentage distribution among programs is assumed, then the breakdown of program direct expenses is $99,294 for Education (86,200 divided by $249,200 X $286,976) $24,106 for Counselling and $163,576 for Media.

When a percentage distribution as illustrated above is used however, it assumes that a similar distribution of Education, Counselling and Media programs will exist in the budget year. This may be completely inaccurate if future planning shifts the program emphasis and a different mix of programs results.

Therefore, the Executive Director would know that the total cost of each program area is illustrated in Fig. 18.13.

The Principle of Rationalization

The project manager must realize then, that the Executive Director's job is to allocate overhead expenses to program areas in order to determine the true cost of each program. However, the project manager must ensure that the system used to allocate expenses to his project is **rational and logical**. If it is not rational and logical it probably will not be acceptable to the funding agency - for this the project manager could be held accountable. Also, poor allocation of overhead expenses could ultimately mean that more project resources are being directed toward overheads rather than in pursuit of the project goal.

Referring again to the case that opened this chapter, the project manager questioned the rationalization used to allocate overhead expenses to his project. This was the proper thing for him to do. He must carefully monitor each and every expense incurred by his project, both project direct expenses and overhead expenses. When the project manager called in to question the overhead distribution, then the Executive Director was also right in being open and flexible regarding this issue. The end result was that the project manager, Dr. Matata, had more resources to direct toward the project goal and the organization found a fairer way to allocate the overhead costs.

Fig. 18.14

BUDGETED REVENUE AND EXPENSES STATEMENT

	EDUCATION	COUNSEL	MEDIA	GRANTS	TOTAL
REVENUE	"Gap"	"Gap"	"Gap"	100,000	$581,326
LESS: PROG. DIR. EXP.	102,200	19,100	165,676	-	286,976
EQUALS: CONTRIBUTION				100,000	294,350
LESS: OVERHEAD EXP.	91,850	97,850	74,650	-	264,350
EQUALS: SURPLUS				100,000	$30,000

Step 5: Setting Price Levels or Revenue Formulae

Determining Contribution Required From Each Program

Contribution is a term widely used in commercial enterprise. That is, the selling price of an item includes the direct cost of producing or buying the item plus a fair portion of other costs incurred by the enterprise which cannot be attributed to any particular item (fixed costs). The difference, then, between the selling price and the direct cost yields a *"contribution margin"* for the item. If the amount is positive, it has made a **contribution**. If the difference is negative, the enterprise has subsidized that particular transaction.

The concept of contribution has analogies within non-profit agencies who, in principle, operate in the same way. The difference is that the price established by the non-profit institution is not a market price. Non-profit agencies are usually not in competition and in some cases core expenses (fixed costs) are already paid for from general grants. This allows the *"price"* to come down as low as the cost of providing the service. When there are no general grants, the Executive Director must ensure that the shortfall is distributed amongst the project program areas in order to determine the price of each project output.

Aiming for a Surplus

Non-profit agencies frequently find it difficult to make long- term plans because funding agencies are often reluctant to make long-term financial commitments to the agencies they support. This is understandable where the initial source of funds is from governments or foundations whose policies change from time to time. What is not understandable, though, is why funding agencies deny non-profit agencies an opportunity to have a capital base on which they can finance deficits in bad years and provide working capital or cashflow between the period a grant is approved and the date it is received.

Many funding agencies prefer to receive budgets that just break even. If a surplus is indicated, it may be struck out before arriving at the amount to be granted.

Non-profit agencies must convince their-partners that budgeting for a reasonable surplus is healthy. One way of doing this is to make full disclosure of the surplus and to account fully for the movement of surplus funds from year to year.

Examine the following abbreviated Budgeted Revenue and Expense Statement, (Fig. 18.14) which is partially complete with information derived from our financial model and subsequent analysis. Where information is still missing, the "*gap*" is indicated.

The budgeting exercise will finally be completed once we determine the operating revenue for each program area.

Unfortunately, there is no magic formula to tell the Executive Director what the revenue for each program will be. He will have to go back to the records and examine correspondence with funding agencies interested in the institution's program. Then he will have to send project proposals accompanied by the budget and specific requests for funding.

Where a user fee is charged, he will have to go back to past records since past experience is a good place to start in making forecasts about the future. Record keeping, therefore, is very important for accurate budgeting.

Determining the Price

You will recall that person days was used earlier to identify activity level. This was done for convenience since "*person days*" is common for many programs carried out by non-profit agencies. However, no institution is tied to this measure when setting a price for project outputs. The following table identifies some of the possible choices for the three program areas identified in our example.

Education	**Counselling**	**Media**
*Person days	*Person days	*Person days
*Classroom days	*Number counselled	*Number of publication
*Students		
*Courses		

Take the Education program for an example. Assume classroom days are selected as the pricing unit.

Days in year	365
less: Weekends & holidays	130
equals: Available Days	235
times: Utilization	60%
	(based on past records)
equals: Days charged	141

If classroom days are used as the pricing unit and there are 141 days available for charging (based on the above set of assumptions), it then follows that the total revenue from the "*Education*" program must be derived from these chargeable days.

Reference to the above incomplete Budgeted Revenue and Expense Statement further reveals that at least $102,200 of program direct expenses and $91,850 of overhead expenses must be covered if the Education program is to break even. Revenue of, say, $200,000 would allow the institution to generate a small surplus from this activity. Therefore, $200,000 in revenue must be generated from 141 classroom days. Each classroom day, then, carries a price of $1,418.00 (200,000 divided by 141).

Is this feasible? Will your user group pay the price? A classroom day at $1,418.00 may be too much, making the planned budget unrealistic.

But before abandoning the plan the Executive Director should examine the possibility of changing to another pricing unit, for instance, number of students. Providing registration is high, this may work.

If 141 days must be charged and average registration per day is approximately 30 students, then the total number of students is 4,230 (141 X 30). To generate $200,000 in operating revenue, each student would have to be charged $47.28 per class day. Will the user group pay $50.00 per student per day?

Very often user's find it more acceptable to be quoted on output-based price (i.e. a price meaningful to a client such as student fees as opposed to classroom days or person days). Users can then more easily evaluate the benefits of the program in relation to their costs.

Now look at the Counselling program. Assume that there are two full time cousellors on staff and that each has the following number of days available for "*charging*."

Days per year	365
less: Weekends & Holidays	130
equals: Available Days	235
less: Non-chargeable days	15
equals: Chargeable Days	220

With two counsellors and an ability to schedule two counselling sessions per day, 880 counselling sessions (2 counsellors X 220 days X 2 sessions per day) can be charged.

Reference to the incomplete Budgeted Revenue and Expense Statement reveals that $19,100 of program direct expense and $97,850 of overhead expense must be covered by revenue in order to break even on the program.

To generate the required 116,950 of revenue, a charge of approximately $133.00 ($116,950 divided by 880 sessions) per session would be necessary.

The Executive Director may consider this unfeasible and determined that a charge of less than $90.00 per session would be the limit. So a charge of $87.87 per session is selected yielding a total revenue of $77,325 ($87.87 X 880 sessions).

There is a resulting deficit of $39,624 and the Executive Director now knows that the Counselling program is being subsidized from the general grant of $100,000.

Finally, examine the Media program. To break even, program direct expenses of $165,676 and overhead expenses of $74,650 must be covered. Assume in this instance that the users of the Media program will not be charged and that a funding institution has agreed to fund the program.

How much funding should the institution request?

As a start the Executive Director may consider $240,326 since this enables the program to break even. At this level, however, the funding institution would be making a contribution to overhead which amounts to 31% ($74,650 divided by $240,326) of the total request. This will not likely be acceptable.

Finally he decides to request $204,000. The overhead contribution in this case is less than 20% of the total amount requested. This is presumably within the acceptable range for the funding institution.

By examining past performance and based on the immediate plans for the budget year, we have now seen how the Executive Director has been able to complete the Budgeted Revenue and Expenses Statement.

From the above the Executive Director determines that the *"Contribution"* from each program area is $97,800, $58,226.00 and $38,324.00 for Education, Counselling and Media respectively. Interestingly, when allocated overhead expenses are subtracted from contribution, the Executive Director can now see for the first time that some programs are heavily subsidized from the general grant of 100,000.

Presuming that the user prices are feasible and that the funds will be paid accordingly, the budget is deemed feasible.

Fig. 18.15

BUDGETED REVENUE AND EXPENSES STATEMENT

	EDUCATION	COUNSEL	MEDIA	GRANTS	TOTAL
REVENUE	$200,000	$77,326	$204,000	$100,000	$581,326
LESS: PROG. DIR. EXP.	102,200	19,100	165,676	—	286,976
EQUALS: CONTRIBUTION	97,800	58,226	38,324	100,000	294,350
LESS: OVERHEAD EXP.	91,850	97,850	74,650	—	264,350
EQUALS: SURPLUS	$5,950	($39,624)	($36,326)	$100,000	$30,000

Step 6 - Completing the Budget

Adding the Final Touches

All financial variables for the budget have now been determined. The completed document follows:

Fig. 18.16

BUDGETED REVENUE AND EXPENSES STATEMENT

	EDUCATION	COUNSEL.	MEDIA	GRANTS	TOTAL
REVENUE	$200,000	$77,326	$204,000	$100,000	$581,326
LESS: PROG. DIR. EXP.	102,200	19,100	165,676	—	286,976
EQUALS: CONTRIBUTION	$97,800	$58,226	$38,324	$100,000	$294,350
LESS: AGENCY CORE EXPENSES					
Advertising					$ 2,100
Automobile					2,500
Delivery					1,800
Depreciation					1,200
Dues & Licenses					800
Insurance					1,500
Interest					1,200
Legal & Audit					2,800
Other					800
Property Tax					670
Repair & Maintenance					450
Rent					4,680
Salaries & Benefits					229,500
Supplies					1,500
Telephone					7,050
Travel					4,200
Utilities					1,600
TOTAL AGENCY CORE EXP.					$264,350
EQUALS: OPERATING SURPLUS/(DEFICIT)					$ 30,000

Board Approval

The board of directors is ultimately responsible for the financial well being of the institution. The Executive Director presents the budget to the board for approval after which it becomes an operational document for fundraising and authorizing expenditure.

Budgetary Control

The Executive Director should not view the approved budget as a rigid document. As time passes, events will take place that will necessitate reviews of the budget. Where the variations are significant, the board and the Director may see a need to revise the budget.

If, for instance, a funding institution which had indicated it would give a grant of $200,000 for a Media program now confirms approval of only $100,000, the program would have to be revised to reduce program direct expenses. Depending on the effect the revision has on the contribution, the surplus will be reduced accordingly. Assuming revision reveals a drop in contribution from 97,800 to $27,800, the operating surplus of $30,000 has now turned to a deficit of $40,000!

The board and Executive Director will have to make a decision now on how the deficit will be financed. If another donor cannot be found at short notice and previous savings are inadequate, the institution will have to institute austerity measures so as to reduce institution expenses in order to make up for the deficit.

Chapter 19

IDRC Budget Development and Financial Administration

Budgeting

The budget is a tool for planning and monitoring project funds. It is the part of the project proposal that translates the programmed activities into quantitative and monetary terms. It can also be used to communicate plans, motivate project personnel to spend within the plan and evaluate the project's performance.

The Budget Team

If the budget is to be an effective project-management tool and not just a means of estimating funding requirements, it must be prepared carefully. It should reflect a commitment made through the concerted efforts of the participants involved.

In preparing a budget proposal, the participants should include members of the research team as well as financial specialists such as the chief financial officer and the purchasing officer.

Budget Preparation

IDRC recommends a seven step budgeting process.

1. Prepare the workplan. It will include the following: A clear statement of project objectives, a work breakdown and a sequenced list of activities.

2. Chart the time and schedule the activities. This involves preparing a network diagram, a critical path diagram or a Gantt chart.

3. Estimate costs of each activity as they are laid out on the sequenced work breakdown, the network diagram, or the critical path diagram.

4. Total the expenses that are to be incurred for each activity.
Group similar expenditure items and obtain group totals where practical to do so.

5. Prepare the proposed budget

6. Plan the timing for the release of Project Funds. This can be done right on the network

diagram. Mark the points at which grant money will be received and mark each individual disbursement. Cash flow can be planned in this fashion.

7. Prepare the Budget Notes

Project Finance and Administration

IDRC Financial Philosophy

IDRC believes that the primary function of a research organization is to conduct research and that the role of the administrative infrastructure is to support that research effort.

Too often, financial administration is regarded, and regards itself, as a policing agency whose objective is to monitor and control research activities by means of financial controls and restrictive regulations.

IDRC prefers to encourage a "team approach", in which the administrative infrastructure serves as a powerful management tool to assist research professionals working in cooperation with their administrative counterparts rather than against them. In this spirit, pertinent financial information is passed to project officers who work closely with IDRC treasury staff. This useful communication back and forth between the project and the Centre serves as a useful way of monitoring a project's progress.

IDRC staff need detailed financial reports from the project on a regular basis. This information permits them to respond rapidly and sympathetically when an amendment to the budget is requested. Thus, IDRC requires that its grant recipients provide more financial information and reports than most other funding agencies.

In line with this philosophy, one of the key words in IDRC's approach to project-budget administration is **flexibility**. The difficulties of maintaining an accurate budget for a long term project are fully understood. There are problems of foreign exchange, rising costs, delays in obtaining equipment and supplies, and shortages of personnel. IDRC's flexibility allows them, as much as possible, to take these factors into account in its administrative procedures.

Also, institutions differ in their accounting systems and reporting methods as well as in their general administrative practices. *As a donor agency, IDRC expects certain minimum standards but does not want to see the research projects suffer as a result of too stringent regulations.* The following guidelines should be interpreted in light of this philosophy.

Financial Guidelines for IDRC Projects

Basic Structure of Project Budgets

The budget of an IDRC-assisted project consists of two parts - the Recipient-Administered Portion (RAP) and the Centre- Administered Portion (CAP).

RAP refers to that part of the budget that is administered by the recipient. It includes such items as wages and salaries, research expenses, and capital equipment. For funds released by IDRC on the basis of the RAP, the recipient will have full authority to hire full-time or part-time project staff and purchase the necessary field supplies and other materials and equipment specified in the budget.

CAP, on the other hand, covers those expenditures that are approved budget items but, because of their nature, are administered by IDRC.

Project Reports

Financial Report

The financial report should allow both the recipient and IDRC to appraise the project's financial situation. It should:

- Be presented in the same format (i.e., using the same budget items) as the budget portion of the Memorandum of Grant Conditions.
- Clearly state the period covered (e.g., from 1 January to 31 December 19__). If the opening and closing dates covered by the report differ from the dates described in the Memorandum, an explanation should be provided.
- Include expenditures for both cash payments and accrued expenses. The latter include expenses that have been incurred but not yet paid such as invoices for goods sent by suppliers and services rendered to the project. To avoid double accounting for accrued expenses after they have been paid, recipients must separate cash payments from accrued expenses.
- Report expenditures in the recipient's local currency, indicating the name of the currency. For institutions that keep and pay their accounts in US dollars, the US dollar is considered the local currency.
- Include a summary of funds received from IDRC, indicating both the amounts in Canadian dollars and the equivalent in local currency as well as the date each installment was received. This information confirms that the correct remittances have been received by the recipient and serves as the basis that IDRC uses for calculating the weighted average exchange rate for converting expenditures in local currency into Canadian dollars.
- Include estimated expenditures for the next payment period.
- Include a list of the equipment purchased.
- Include an analysis of variations between budgeted and actual expenses as well as explanatory notes for major variations (more than 10%) in any given time.
- Include other project income, if applicable.
- Have it signed by both the project leader and the recipient's finance officer.
- Provide an analysis of the cash position at closing date.

Processing the Financial Report.

Within IDRC, the report is analyzed by staff in the Office of the Treasurer who:

- Calculates a weighted average rate of exchange and then converts local currency into Canadian dollars.
- Compares actual expenses with the budget. The variance is analyzed in both the local currency and Canadian dollars.
- Reviews estimated expenses to see how they will affect the financial outlook of the next payment period.
- Reviews the file date of the project with particular attention to how the project is faring in terms of the expected completion date.
- Reviews the history and schedule of payments.
- Analyzes the project's cash position.

The results of the analysis, which may include observations, queries, and concerns about the project's financial results as well as recommendations for payment or nonpayment, are then conveyed to the IDRC program division concerned. The program staff discuss the results with a representative from Treasurer's Office and a letter is sent to the recipient.

The speed with which funds can be released is determined by the recipient's submission and presentation of financial reports. In many cases, questions need to be asked and answered (an exchange that can take considerable time) before IDRC can complete an evaluation of the project's financial standing and authorize release of funds.

The Standard Project Accounting Kit *

IDRC has developed a set of recording and reporting forms for use on IDRC-assisted projects. They are introduced and discussed below.

Report Form

This form consists of a Monthly Financial Summary and the Financial Report. The instructions on how to fill out the form are given on the form itself. Although the alternative forms are basically the same, the report form has several alternative designs that may be used depending on the need of a particular project.

The forms differ only in the amount of space provided to allow for the difference in the volume of transactions and for the difference in the method of filing. The report form is most useful to small projects because of its conciseness.

Columnar Form

An alternative approach, the Columnar Form is also included. The Columnar Form consists of a cash record and a classification of expenses by columns.

The cash record contains a record of all cash receipts and cash payments. Columns are provided for the classification of expenditures. Each expenditure column may consist of a portion for budget balance. The financial report can be prepared by taking the total actual amount paid for each type of expenditure. Since the classification of expenditure follows the budget item titles, comparison between the actual and budgeted amounts is facilitated.

The supplementary records are separate summaries for voluminous transactions; information from which is necessary for financial control. These records may or may not be used depending on need.

The record of unpaid bills is needed to keep track of project payables and obligations. The record of advances and liquidation is needed to control and follow-up advances to personnel. The equipment record helps to summarize the types and costs of equipment owned by the project. The inventory record is necessary to keep track of valuable research supplies.

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* *Financial and Administrative Problems as perceived by IDRC Assisted Research Projects in Asia*
A report of the DEVIAD Workshops held in Sinapore 8 - 10 July and 13 - 15 July 1981.

Instructions

Reports on cash position (Sections A, B, C, and D) should be completed at the end of each month. Sections E and F are used for recording the details of the transactions and should be filled in at the time of the transaction. For Section C, the Item's Budget Heading and Item Number (e.g. F-1, F-2, etc.) should correspond with those reported in Section F. Documents supporting the transactions should be grouped by budget headings and filed in the order that the budget heading appears in Section F. Extra copies of Section F are provided for use when there are more than three budget headings. Alternative forms (A and B) are also provided for Section F. These can be used when extra space is required for recording transactions.

Special Transactions

1. Some expenses may have to be paid out of an advanced amount. Expenses involving small amounts can be taken from a petty cash fund, which is considered as an advance payment to an assigned custodian. Advances that are issued and liquidated should be reported in section E. Upon liquidation, expenditures should be classified according to the items' budget heading and reported in Section F. But, they should not be transferred to Section C (Payments).

2. Payments of expenditures from funds from other donors need not be reported. If a payment is shared with another donor, only the amount chargeable to IDRC should be reported.

3. The Ending Cash Balance, which appears in Section D, should be reconciled with the amount of cash in the bank. Additions to, and deductions from, the cash account that are made by the bank (e.g. interest income, service charges) should be reported in Section B (Receipts) and Section C (Payments), respectively. The details of these entries should appear in the appropriate place in Section F. The process of reconciliation must consider outstanding checks (i. e. checks issued but not yet presented to the bank for payment).

Instructions

When to Prepare

This financial report should be sent to IDRC at the time specified in the Memorandum of Grant Conditions. The project coordinator, however, may find it useful for good financial management to complete this form more often (e.g. monthly).

How to Prepare

Column 1 - Enter the budget headings used in the budget portion of the Memorandum of Grant Conditions. These headings correspond to those found in Section F of the Monthly Financial Summary.

Column 2 - Enter the total expenditure for each budget item recorded in Section F. If the report is for twelve months, the amount that is entered should be the total expenditure on that budget item for the entire twelve-month period.

Column 3 - Convert into local currency the budgeted amount appearing in the Recipient-Administered Portion of the budget in the Memorandum of Grant Conditions. Enter this amount in Column 3 and indicate the year or period that is covered. The conversion rate that

MONTHLY FINANCIAL SUMMARY

				Centre File No.
Month	Year	Project	Title	Currency

A. BEGINNING CASH BALANCE

B. RECEIPTS

Date	Nature of Receipts	Amount
		Total →

C. PAYMENTS

	Nature of Expenditures	Amount
	Total Advances Issued (see Section E-1)	
	Direct Expense (see Section F)	
F-1		
F-2		
F-3		
F-4		
F-5		
F-6		
F-7		
F-8		
		Sub-total
		Total →

D. ENDING CASH BALANCE (A+B-C)

is used should be the exchange rate used in the original budget proposal.

Column 4 - Enter the difference between Columns 2 and 3.

Column 5 - Enter your estimate of the additional expenditures to be made during the next period or until the completion of the project.

Accounting Kit - Columnar Form - Transactions should be entered in this columnar accounting kit in chronological order. Provide one column for each budget item or expenditure item. At the bottom of the jounal, there are four line totals, namely:

- Monthly total.
- Accumulated total.
- Annual budget.
- Budget balance.

Fill in these totals at the end of the month. The annual budget figure should be taken from the Memorandum of Grant Conditions and converted into local currency.

E - ADVANCES

E - 1 ADVANCES ISSUED

Date	Check No.	Name	Purpose	Amount	
			Total ⟶		

E - 2 ADVANCES LIQUIDATED

Item nos. should correspond with those at Section F

Date Liquidated	Date Issued	To - Purpose	Item No.	Amount					
				Advanced		Returned*		Used**	

* To be reported in Section B - Receipts

** To be reported in Section F under the item indicated

F. DETAILS OF EXPENDITURES

TRANSFER SUB-TOTAL FOR DIRECT EXPENSE TO SECTION C

F-	Item's Budget Heading ▶				
	Date	Check No.	Details	Amount	
	A. DIRECT EXPENSE				
			TRANSFER THIS SUB-TOTAL TO SECTION C →		
	B. LIQUIDATION OF ADVANCE (TRANSFERRED FROM E-2)				
			SUB-TOTAL →		
			ITEM TOTAL		

F-	Item's Budget Heading ▶				
	Date	Check No.	Details	Amount	
	A. DIRECT EXPENSE				
			TRANSFER THIS SUB-TOTAL TO SECTION C →		
	B. LIQUIDATION OF ADVANCE (TRANSFERRED FROM E-2)				
			SUB-TOTAL →		
			ITEM TOTAL		

F-	Item's Budget Heading ▶				
	Date	Check No.	Details	Amount	
	A. DIRECT EXPENSE				
			TRANSFER THIS SUB-TOTAL TO SECTION C →		
	B. LIQUIDATION OF ADVANCE (TRANSFERRED FROM E-2)				
			SUB-TOTAL →		
			ITEM TOTAL		

USE ADDITIONAL SHEETS WHEN NECESSARY

F. DETAILS OF EXPENDITURES

ONLY SUB-TOTAL FOR DIRECT EXPENSES SHOULD BE REPORTED IN SECTION C

F-

Item's Budget Heading ▶

DIRECT EXPENSE (transfer to Section C) / LIQUIDATION OF ADVANCE (Transfer from Section E 2)

Date	Check No.	Details	Amount	

F-

Item's Budget Heading ▶

DIRECT EXPENSE (transfer to Section C) / LIQUIDATION OF ADVANCE (Transfer from Section E 2)

Date	Check No.	Details	Amount	

F-

Item's Budget Heading ▶

DIRECT EXPENSE (transfer to Section C) / LIQUIDATION OF ADVANCE (Transfer from Section E 2)

Date	Check No.	Details	Amount	

F. DETAILS OF EXPENDITURES

F-	Item's Budget Heading ▶				
	Date	Check No.	Details	Amount	
	A. DIRECT EXPENSE				
			Transfer this sub-total to Section C →		
	B. LIQUIDATION OF ADVANCE Transferred from E-2				
			Sub-total →		
			Item Total		

RECORDING & REPORTING KIT

COLUMNAR FORM

(In Local Currency) Page________

Date	Description	Reference	Cash			Budget Items							
			Received	Paid	Balance	1.1	1.2	1.3	2.1	2.2	3	4	5
	Monthly Total Accumulated Total Annual Budget Budget Balance												

FINANCIAL REPORT

From :
To :
Period

Project Title

Centre File No.

Currency

Item's Budget Heading (1)	Actual Expenditures (2)		Budget Year_____ (3)		Variance Favorable (Unfavorable) (4)		Estimates for the next period (5)	

Submitted by :

Finance Officer

Project Coordinator

SECTION VIII

IDRC Library and Training Resources

Chapter 20

The Centre Library

The Centre Library has a collection of approximately 50,000 books and 4500 serial subscriptions. It is considered a working collection which means that material is purchased to support the on-going activities of IDRC. A major objective, therefore, is to support the information needs of IDRC staff as well as to meet the needs of projects which are funded by IDRC.

The Library has access to a vast amount of information including access to over 300 commercial databases. It endeavors to help project staff obtain specific project related information.

The libraries located in the Regional Offices have small collections of books and periodicals which provide general information related to the development field e.g. names and addresses and information related to the region and general statistical information. These offices are located in Bogota, Cairo, Dakar, Nairobi, New Delhi and Singapore.

Literature searches

When a project commences, it is often useful to request an automated literature search to review previous research in the subject area. A list of references tailored to the specific information needs of the project can be generated. To obtain the most relevant results, the library staff will request the project manager to identify:

- The subject area in narrative form.
- The key words.
- The names of the major authors in the field.
- Parameters such as geographical region, language of citations, and time span.
- The number of references required.
- The date that the printout is needed.

Document Delivery

When the results of the literature search are available, project staff can then request the documents that they require.

The Library purchases books and serial subscriptions for project accounts. Project staff should obtain information about the publication and then obtain financial approval before making a request to the Library.

Journal articles can be retrieved from the Library's collection or obtained on an interlibrary loan.

Current Awareness

The Library provides two types of current awareness services. The first is an automated selective dissemination of information (SDI) service using commercial data bases. This service provides a print-out on a regular basis and keeps project staff informed about current research in their area of interest.

The second current awareness service is designed to keep project staff informed about articles published in specific journals. To do this the library distributes copies of the tables of contents of the journals as they are received. Both services are available upon request.

Development Data Bases Services

The Centre Library provides access to eleven databases through its Development Data Bases Service. These databases are listed below:

- ACRONYM: Acronyms relating to international development.
- BIBLIOL: The collection in the IDRC Library.
- DEVSIS: Development literature published in Canada.
- SALUS: Low-cost rural health care.
- IDRIS: Inter-Agency Development Research Information System (197) IDRC projects, International Foundation for Science (IFS), Swedish Agency for Research Cooperation with Developing Countries (SAREC), Board on Science and Technology for International Development (BOSTID), German Appropriate Technology Exchange (GATE), United Nations University (UNU), and Japan International Cooperation Agency (JICA).
- FAO: Documentation database of the Food and Agriculture Organization of the United Nations.
- ILO: LABORDOC database of the International Labour Organization.
- ERG: Energy topics in the Third World
- UNESCO: Database of the United Nations Educational, Scientific and Cultural Organization.
- UNIDO: Industrial Development Abstracts database of the United Nations Industrial Development Organization.
- AID: Document database of the United States Agency for International Development (USAID).

IDRC provides this service free of charge. The cost of telecommunications, however, is the user's responsibility.

Assisting Library Staff

The Archival Collection

The Library's Archival collection contains reports and other documents produced by IDRC projects. When these items arrive in Ottawa from the project sites, copies are sent to the program officers and, in the IS Division, to the Library. All this material is indexed and microfilmed so that microfiche copies are available upon request. Project officers can help the Library to keep the archives current and relevant by sending project outputs into their Program Officer on a regular basis. This material then becomes accessible to researchers around the world.

Project Completion

The Library's goal is to support projects that are funded by IDRC by providing in-depth information tailored to the specific needs of the project. However, both the Centre Library and the Regional Libraries will give limited service to those projects whose funding agreement with IDRC has expired. This limited service includes providing photocopies or microfiche copies of documents and conducting searches on IDRC's databases.

Chapter 21

Training in Information Science Projects

An objective of the International Development Research Centre (IDRC) is "*to assist developing countries to build and maintain indigenous research and research supporting capacity.*"

This assistance is to be carried out "*mainly at the national but also at the regional level and mainly in terms of human resources*".

This objective stems from the belief that every society is "*capable of enhancing its human resources by providing them with the basic skills for taking responsibility for their own well being and for making a self-fulfilling contribution to the greater community.*"

Thus, although IDRC is not a training institution, training and staff development are a central part of the programs and projects supported by the Centre.

The Fellowships and Award Division (FAD) has responsibility for administering training programs which cut across all the Divisions of the Centre. FADs programme is described in the next chapter.

The Information Sciences Division (ISD) carries out this mandate by designing projects that build indigenous capacities within developing countries for the effective management and application of information for development.

Training Needs in Information Sciences

The field of Information Sciences is a dynamic one. Advancing technology provides tools which allow for great degrees of specialization and refinement in information services. In addition, the creation of new disciplines and the increase in knowledge produce new types of users and information needs. Moreover, activities in information sciences are no longer carried out only by persons whose primary area of specialization is information/documentation. Subject specialists have now entered the field and STI project managers come from a variety of technical backgrounds including for example engineering, agriculture and economics.

Training in information sciences is thus characterized by the need for continuing education. In some cases it is necessary to ensure that project staff have the opportunity to acquire basic information skills to supplement technical/scientific qualifications. In other cases, it is necessary to give project staff the opportunity to learn new technologies or techniques to keep pace with the continual changes in the field. These changes occur regularly in areas such as the design of specialized information services, automation of library functions, database construction, international database searches and thesaurus development.

There is also a need to look at new ways of providing information services because of the changes resulting from some of the following advances:

- Increased amount of knowledge and number of specialized disciplines.
- Emergence of new groups of users who require more and more specialized information.
- Development of systems which use facilities such as networks, automation, telecommunication and other rapid means of information reproduction and dissemination.

Types of Training Available

Advanced Training

Along with the urgent need for training is the recognition that the required specialized training is not usually available in developing countries. This means that training in the Information Sciences has had to be acquired at colleges and universities in developed countries.

This situation is not satisfactory. The ISD recognizes that information, technological and skill transfer should be appropriate and based on needs. Thus whenever possible ISD promotes South-South transfer programs and seeks to find training opportunities within developing countries. In this connection one ISD program, carried out under the Socio-Economic Information Program, is concerned with information science education in developing countries. The program concentrates on building regional capabilities for continuing and higher education in the information fields. This program of institutional capacity building is carried out in close collaboration with the Fellowships and Awards Division.

Activities have included providing on-going assistance for the development of postgraduate programs at the University of Ibadan, Nigeria, and the Universidad Simon Bolivar in Venezuela and providing support for the development of seminars dealing with curriculum review in China, Thailand and Jamaica.

The Division's Information Tools and Methods program has just completed the development of a project designed to link Ecole de bibliothécaires archivistes et documentalistes (EBAD) of the Université Chiekh Anta Diop, Dakar, Senegal and the Ecole des sciences de l'information (ESD), in Rabat with the Ecole de bibliothéconomie et des sciences de l'information (EBSI) of the Université de Montréal. The project will develop and evaluate teaching tools in informatics related to documentation and will also help standardize teaching programs in Documentation Science. This program is expected to have a major impact in French Speaking Africa since the schools in Dakar and Rabat serve that whole region.

Continuing Education and Short Term Training

In the Information Sciences Division a small number of projects have been designed exclusively to meet training needs.

The training offered by these projects includes:

- Management of information systems.
- The use of modern technology.
- Computer communication.
- Documentation and information standards.
- Development of micro-computer based instructional resources.
- Preservation of archives.
- Micrographics.
- Documentation techniques.
- Industrial information.
- Development of training materials.

These projects were carried out in Kenya, Mali, Tanzania, Senegal, Hong Kong, Philippines, Haiti and Venezuela. In some cases funding was shared by IDRC, FAD and UNESCO.

Training Support

Requests for long-term training may be referred to FAD for consideration. However, with regard to short term training, the Information Sciences Division funds training in activities that relate to the projects it supports. There are several reasons for this policy.

First, it helps to ensure that the project is able to achieve its objectives.

Second, it ensures that the training provided responds to the specific need of the agency/institution.

Third, it ensures that the right people are trained to do the job and that the experience and knowledge gained in the training program is immediately applied.

Fourth, it ensures the efficient use of training funds.

Finally, training directed to job related tasks leads to a maximum return on the resources invested in the project as well as increased satisfaction for the participants.

Within the Information Sciences Division efforts are made to match training needs with existing training programs where this is possible.

Short-term Training

Over the last 10 years, the following training initiatives have been supported within STI projects:.

- General management of information-centres/services. This is usually organized on an in-service basis within a well-run documentation centre or information service.
- Short courses on information management, including standard formats and methodologies. These are usually aimed at personnel working within an information centre and are organized both through in-service training or course attendance. For example courses are run by FAO on AGRIS methodologies and by (ACCT) Agence de Cooperation Culturelle et Technique in France on basic information management.
- Training on the use of computer technologies.
- Training in the operation and maintenance of project-related equipment such as computers, micrographics, photocopiers and photo-offset equipment.
- Participation in international information conferences/workshops relevant to the objectives or subject area of a particular project.
- Communication skills. Examples include: training in the production of project outputs such as technical writing and newsletter production.

- Study tours or visits to institutions that are leading the field in areas that impact a particular project.
- Production of audio-visual materials.

Choice of Participants

Training needs are usually identified in the project proposal and are linked to the project activities.

It is important that the right people be chosen to participate in training events. Criteria to be considered include the prior experience and knowledge of the candidate and the interest they have in the subject area.

Another concept that should be given strong consideration is "*training for trainers*." People who are required to transfer their knowledge to others should have the opportunity to learn how to do this effectively. This idea is strongly encouraged by the Division.

Role of Project Managers in Staff Training

At the beginning of the project it is expected that project managers will arrange for in-house training in order to orient their staff to the project activities and objectives. They should also be prepared to engage in training and development activities to assure that their staff have the skills required to complete the project activities. As we suggested in Chapter 7, The Leader/Manager, the role of the project manager is to develop their employees from a Developmental Level 1 to a Developmental Level 4.

This kind of "*developmental training*" could include some of the following activities.

- Regular meetings to discuss project development.
- Identification of further training.
- Training of new employees.
- Identification of local training initiatives which could improve the skills of the project team.

Conclusion

Project managers say that their most urgent problem is locating and attracting people with the skills to do the work. The project manager must therefore plan a very careful recruitment policy and follow-up with a well designed training and development program.

Whenever possible, on-the-job training should be given priority. Next best is training at local institutions or failing that national and then regional institutions.

Bilateral training courses organized/funded by international agencies or multilateral organizations are sometimes available. IDRC regional staff are usually aware of these opportunities which should only be considered when the training resources are not available locally.

Project management training for the Information Sciences Division program officers, however, often advise and counsel project staff about management issues during project negotiation and project planning. As well, during project monitoring every effort is made to solve problems and to adjust the project according to changing circumstances and difficulties inherent in the local situation.

Chapter 22

Training in Project Management

The recent discoveries, developments and diffusion of information technologies in developed countries has ushered in an unprecedented proliferation and infusion of computer based technologies in developing countries. This has happened with such speed that some institutions are literally bombarded by what Schware and Trembour (1985) called the *"barefoot microchip"*.

These technologies are received by the developing world out of a belief that they will accelerate the development process. However, developing countries do not have the economic and human resource infrastructure and organizational culture to absorb and these technologies. In fact, as ILO (1985) observes, most institutions in developing countries suffer from the problems of inadequate integration of human resources concerns in the mainstream of overall institutional and national development plans.

For the most part, donor agencies have fallen into the same technology trap. In their zeal to market new technology, they have often dumped them in institutions without appraising the human resource base or the operating environment. Morss (1984) observes that the proliferation of development projects with their associated technologies has had destructive effects in some countries. In some of these countries, Morss observes, "*instead of working* to *establish comprehensive and consistent national and institutional development objectives and policies, government officials are forced to please donors by approving projects that mirror the development enthusiasm of each donor*" (p. 465).

Project leaders have the responsibility and moral obligation to protect their institutions from the proliferation of technologies without appraisal of the human resource base. Following that there must be thorough training to facilitate the introduction of the new technologies.

The human resource issue in developing countries is so crucial that the Canadian Government, after years of experience and reflection, came to the conclusion that "*thinking human resources development in everything we do should become a trademark of Canadian aid*" (Winegard Report, cited in CIDA, 1987 p.37).

Echoing the famous contention of the South Commission Chairman, J. K. Nyerere that *"Development is about people"*, the CIDA report: Sharing our Future, makes human resources development activities the central theme of all development aid. In its own words: *"people are in fact not only the most crucial resource but the raison d'etre of development, both the means and end. The development of human resources must be the first priority, because the developing countries need large number of competent, well trained, and educated people to carry their societies forward to reach their goals ... and because people must come first if the development process is to make sense. Human resources development (HRD) is the key that can unclock potential talent and abilities, opening the way to social and economic progress."* (CIDA p. 36)

This is the context within which the Fellowships and Awards Division (FAD) functions. The division views training in broad terms recognizing that it involves the development of individuals, groups, and institutional capacities for sustainable growth, generation of technology and the implementation of development activities.

It is becoming increasingly clear that training in the information sector, especially at graduate level, is not just a matter of acquiring skills on how to operate new technologies. Rather, it involves the broader issue of managing technology for development. This calls for an understanding of the development issues surrounding the introduction of new technology. This is particularly critical in the information sciences as the technologies are characteristically embedded within the work environment and culture. As one Egyptian health administrator noted: *"If you bring in a tractor or a drilling rig, all you need to do is to train people to run that particular machine and maintain it. But successfully adapting the microcomputer has nothing to do with simply teaching people how to run the machines. First you have to successfully run your office or laboratory or department before the computer can be of any help at all"* (Cited in Schware and Trembour p. 16).

This is why students who study in developed countries very often lack the developmental context for technology transfer and applications in developing countries. Often, the assumptions made about the workplace in developing countries are not correct. In Marghalani's (1987) words, *"To establish modern technology in a developing country, we need to change social systems and human skills and the physical implements in which technology is embedded* (p. 357).

Marghalani enumerates the following factors to be taken into account:

- Lack of available trained manpower.
- Low profile associated with jobs in the information science.
- Lack of study and promotional avenues and opportunities - hence *"dead end jobs"*.
- Lack of experienced personnel.
- Limited associated technologies or infrastructure ie.telephone lines.
- Locational isolation of individuals, ie. Computer room/library.
- Language barriers (both technical and regular mediums).
- Fear of technology among incumbents and the old guards.
- Misplaced expectations of technology as panacea of all ills.
- Technological illiteracy of users.
- Unstable leadership ie. when one director leaves, the initiative may die as well

- Security and secrecy of information
- Lack of standardization
- Lack of institutional information technology policies.

These are the real issues. There is a lot of evidence to suggest that in many developing countries technological gadgets have been installed but are then underutilized due to poor training and implementation plans. Beyond the technical objectives of training such as enhanced user satisfaction, cost effectiveness, integration of vertical and horizontal functions, and the simplification of operations, project managers have to consider issues of a cultural, organizational, political, and contextual nature if technology is to be an effective tool for accelerated economic transformation.

The 1987 Nobel Prize Winner in Economic Science, Professor Robert Solow may have been right to say that it was *"technology and not capital"* which was key factor in economic growth and development but he was not oblivious of these broad issues (Daily Nation , 21.11.88 : Experts to look at science as a development agent p.13).

IDRC Training Policies and Mechanisms

Project leaders have two avenues open to them for accessing training funds: via projects in the division or via FAD annual allocations.

1. Via Projects in the Division

One route is through the project itself - during the project development stage. After a careful analysis of the human resources issues related to the project objectives, project leaders may include in the budget training funds sourced from the Research Division or from FAD or from both. Characteristically this training is done through short term induction courses, workshops, conferences, and seminars. Occasionally it includes masters level courses.

The advantage of accessing training funds in the project proposal include:

- The project leader has control of the funds once they are in the budget.
- Ensures integration of training into project objectives.

Disadvantages include:

- Requires negotiation for any change to be made.
- Takes away funds from project activities.
- May delay completion of project if the training extends over a long period.

2. Via FAD Annual Allocations

The second way to access project funds is through the Fellowships and Awards Division which has annually appropriated training budgets.

The advantage of this route is that it is flexible and responsive throughout the life of the project. However, since there are no divisional allocations, the competition for these funds is very stiff.

Training Objectives

1. Project Support Training

This training is designed to upgrade the skills of staff members working in those institutions that have been chosen to host a new project.

It takes the form of on-the-job training, apprenticeship programs, temporary assignments, short-term diplomas, and masters degrees taking less than two years.

2. Program Support Training

The project mode of funding training activities is not ideal since it can often be disintegrative, time-consuming, labour intensive, and short term (Morss, 1984). Thus many institutions prefer the program mode of funding. It is broader and longer term.

As new research and development programs are put into place, training needs naturally arise. For instance, a country may establish a new program in the field of Agriculture and Nutrition Information Systems which requires training integrated over the short and long term.

3. Institutional Support Training

Many donor agencies are now convinced that successful research and development projects require planning much beyond the narrow interests of the individual project. Thus, training is often given to non-project personnel who perform support functions essential to the effective operation of the institution. These include administrators, accounts clerks, secretariat, managers, technicians, and communications people.

Alongside this training, consideration is given to other infrastructure supports such as microcomputers, transport, laboratory equipment and raw materials not locally available. In other words, trained people should have access to the facilities, resources, and equipment they require to put their skills to work.

Support Mechanisms

To achieve the three objectives listed above, FAD has three mechanisms of support.

1. Individual Awards

These are given to individuals who show the potential to make a significant contribution to the research or growth and development of the home institution. This could include: attending short courses mounted by others, the opportunity to study toward a technical diploma or masters and PhD degree.

Because of limited resources, selection is done carefully and strategically according to the following criteria:

- Activity in research and information management.
- Leadership in a research and/or information project (multiplier effect). This refers to applicants who have potential to master more than one skill and who are flexible, eager to learn, and good at working with others. These people are referred to in the current corporate literature and those who "*believe in constant incremental strategic improvement in the operation.*" This viewpoint is favored over those who, upon achieving a goal or objective, sit down and celebrate - No prescribed plateauing or "*Kaizen*" (Feuer and Lee, p. 24).
- Affiliation with an institution or unit which has a research mandate.
- Involved in an IDRC supported project or priority program area.
- Recommended by the employer and/or project leader.
- Endorsed by from FAD and the other appropriate program division.

- Received admittance to an appropriate institution in the region, Canada, or elsewhere (in that order of priority).
- Meet age requirements: PhD - 35, Masters - 45.

2. Group Training Courses

These sessions are popular and productive because they are flexible and can be organized as a response to specific needs. The objectives of group training include:

a. Project Development Thrusts. Participants come to a course with preliminary ideas and use the structured setting to develop their proposals with help from consultants and/or IDRC program staff. In the process, they learn new procedures, standards, techniques and research methodologies.

b. Skills Update and Development. Many senior researchers and managers have never had the opportunity to acquire skills in the areas of management, statistics, computer programming and operation etc. Short tailor-made courses can easily be designed to fill in some of these gaps e.g. current courses offered in microcomputer application.

c. Creation and Stimulation of the Research Climate.

Short courses can often be used to raise the stature of new or neglected research areas or methodologies and stimulate the submission of research and development proposals. Some of these areas include: biotechnologies and related information systems, remote sensing and imagery data, rootcrops and marine resources.

The criteria used for development and funding of such courses include:

- Validation of training needs by FAD and the relevant research division(s).
- Relationship with IDRC priority program areas and affiliated institutions.
- Institutional capacity to mount the courses within the regions.
- Multidisciplinary or generic nature of skills.

IDRC has supported over 20 group training courses in Africa. Some such as those involved with microcomputer applications and statistical methods in health, social sciences, and agriculture; general management and computer technologies are recurrent.

3. Complementary Human Resources Development Activities

There are a variety of activities designed to improve the skills and knowledge of project personnel. These activities include:

a. Strengthening graduate studies in the region through the IDRC supported network of Deans of Graduate Studies (brochure available) and the establishment of the School of Information Sciences for Africa based in Addis Ababa University (program content appended).

b. Training needs assessment missions and meetings (ie. one in agriculture and another one in publishing and communications).

c. Evaluation of training programs in developing countries and Canada.

d. Manpower studies in relevant program areas.

e. Development and production of research training manuals.

f. Research management training seminars.

g. Tracer studies to locate and evaluate the utilization and preoccupations of previous awardees.

Application Procedures

The awards are usually identified during project negotiations and recommended to IDRC by recipient institutions.

Many individuals apply directly and, if found to be in programs and institutions where IDRC has an interest, their applications are circulated for appraisal and comments.

Once acceptance in principle has been obtained, a detailed application form is completed with an attached Curriculum Vitae, transcripts and institutional affiliation and is placed in the pipelines for funding.

There are no deadlines for application but selection and placement may take as long as a year. Some of the recurring problems experienced in making placements include:

- Assuring placement in appropriate institutions.
- The rising cost of tuition fees for foreign students.
- Extended duration of training.
- Demands to fund spouses and children.

Fig. 22.1 Additional Information about Training

References

C.I.D.A., *Sharing Our Future*, Hull-Ottawa, C.I.D.A. 1987

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ILO, Manpower Planning in National Development:

The Evolution, Orientation, and Activities of an ILO Program. ILO Seminar Paper to Regional Seminar on Human Resources Development in Eastern, Central and Southern Africa, Nairobi, March 1985.

Marghalani, M.A., Factors Affecting Information Technology Transfer in Developing countries. *ASLIB Proceedings* no. 39, 11/12, 1987, pp. 355-359.

Morss, E.R., Institutional Destruction Resulting From Donor and Project Proliferation in Sub-Saharan African Countries. *World Development* vol. 12, No. 4, pp. 465 - 470.

Schware, R. and Trembour, Rethinking Microcomputer Technology Transfer to Third World countries. *Science and Public Policy,* February 1985, pp. 15-21.

APPENDIX

Participants Report and Recommendations

The Process

A rapporteur was selected for each half day session. There were nine rapporteurs altogether. Their job was to make notes on the proceedings and, in particular, monitor participants' comments, questions and concerns. When the meeting concluded, the rapporteurs met as a group and prepared a preliminary report with recommendations. The rapporteurs then presented their report to the plenary session where it was amended and then finally approved.

The report that appears below is the result of this process.

Participants Report

Function of IDRC

IDRC is a catalyst, a facilitator and a co-financer of research and information.

Role of Recipient Institutions

Recipient Institutions must demonstrate a firm commitment to the project and its objectives. The execution of the project is the recipient's responsibility.

Involvement of the Project Managers

Project managers should be involved as much as possible in all aspects of project design and planning.

Project Design and Planning

Due to the realities of the local situation, time and costs for different activities may vary a great deal.

Project Goals and Objectives

Project managers should use techniques such as Gantt Charts and the Critical Path Method to plan and control project activities in order to meet project goals and objectives.

Mandate of the Recipient Institution

Project objectives should be framed keeping in mind the mandate and mission of the recipient institution.

Project Planning

Project planning should be a team effort using a four step process: analysis, decision making, implementation, and evaluation as discussed in the training sessions and exercises.

Grant Document (MGC)

A project commences only after the MGC is duly signed by the recipient and IDRC. The MGC is a legally binding document. The MGC and the Project Summary are not one and the same document. The Project Summary is the working document.

The Project Manager and the MGC

The project manager must study MGC very carefully. The MGC should be available to the manager and the project team at all times.

Project Records and Communication

Project managers should ensure that the Technical and Financial Reports are submitted to IDRC at the times specified in the MGC. Copies of the reports should be sent to the appropriate regional office. Problems faced by project managers should be reported to the principal program officer as soon as possible in order to facilitate the problem solving process.

Leadership

Project managers should use varying levels of directive and supportive behavior depending on the developmental level of their team members. The project manager has an important role to play in ensuring a healthy project culture.

Twinning and Networking of Projects

Information projects with similar objectives, methodologies, products and services should set up mechanisms to share knowledge, expertise, and experiences in a meaningful manner. Plans of action envisaged by the twinning exercises should be followed up by the participants. Informal as well as formal networking amongst project staff should be encouraged.

Capital Equipment and Resources

Project managers should be familiar with local conditions regarding supply and maintenance of equipment and availability of spare parts. Choice of equipment should be justified by the project's activities.

Project Evaluation

Project managers should know that every project is evaluated by IDRC at different levels of detail for its own internal use. Project managers should be sensitive to the extent to which their projects are meeting objectives. External evaluations are possible and will be considered by IDRC on a case by case basis.

Financial Management

Project managers should attempt to estimate project budgets using the models presented and applying concepts relating to overhead costs in relation to planned activities. Any deviations in the budget reallocations from one line item to another in excess of ten percent of the item requires the approval of IDRC.

Devaluation

In the event of devaluation of local currencies, IDRC will re-examine costs and suitable readjustments could be made. Surplus funds, if any, will need to be returned to IDRC.

Revenue

Information on revenue derived from the sale of project outputs or services will be of interest to IDRC and should be reported. Insignificant amounts, however, may be ignored in reporting.

Training

Project managers should include project related training in their project proposals during project development. Training needs emerging during the execution of a project should be brought to the attention of the principal program officer.

Identifying Appropriate Trainees

Project managers should identify candidates with the right background and aptitude before nominating them for training.

Return of Trainees

The recipient institution should take appropriate measures to ensure that those who have taken training return to their institution after the training period.

Project Outputs

Outputs must be designed to ensure that they meet the real needs of users.

- Focus on needs of known users rather than unknown users.
- User needs change over the life of the project and products should reflect these changing needs.
- In some situations published information alone is not adequate to satisfy user needs. This has to be supplemented with information from other sources including the knowledge of specialists.
- Promotional activities should be included in the project at the time of project development.
- Projects should share information on their promotional methods and their success stories with other information projects.

- Projects should adopt a flexible and variable pricing policy for its information products and services.

Other Management Issues

The project should, within time constraints, consider activities for achieving sustained and continuous information services. This could be done through flexible pricing policies based on user's demand for information and through arrangements with pertinent agencies and government institutions etc.

Access to IDRC Databases

IDRC library services are available for all IDRC projects. Project leaders can forward project related requests for literature searches and profiles for SDIs. Those who require telecommunication facilities and have the ability to pay for can arrange for on-line access to IDRC databases.

Services to External (Non-Project) Users

Users have access to IDRC development databases. However, it is expected that where local or national resources are available, they will be used before making an approach to IDRC.

Access to Project Outputs

All IDRC project outputs are part of the IDRC library archives.

Recommendations and Suggestions for the Future

Inter-Project Communication

Establishment of a STI Projects Newsletter is thought to be highly desirable and a way to build on the contacts made and experiences shared at this meeting. This should be organized by the project managers themselves. IDRC is requested to facilitate the production and distribution of the Newsletter. Mr. Boris Fabres and Dr. S. Lawani agreed to follow up on this.

Project Management Training

IDRC should build on the success of this meeting by considering:

- Similar meetings at regional and sectoral levels.
- Meetings for IDRC projects at the country level to discuss country-specific issues.
- Meetings similar to this one focusing on specific issues for all STI projects.

Manuals for Software Selection

There is an increasing interest in the application of database software in IDRC projects. Because of the diversity of software packages and lack of expertise in choosing appropriate software, it is recommended that IDRC consider preparing a manual for the selection of software suitable for specific applications.

Training

A shortage of staff with professional skills is the major problem faced by a number of countries. It is recommended that IDRC consider organizing training courses for trainers at country and regional levels. The areas that need particular attention are: management (planning and analysis), systems analysis, application of information technology, documentation and information packaging (for those projects involved in repackaging information for dissemination).

Access of STI Project Managers to Project Outputs

Projects should forward copies of all outputs to their program officers for input into the IDRC archives. However, in order to provide STI project managers with an accurate profile of other related projects, IDRC should consider circulating a directory or listing of all STI project outputs.

Select Project Management Bibliography

Aptman, Leonard H. "Project Management: A Process to Manage Change", *Management Solutions*, v. 31, August 1986, :30

-------"Project Management: Criteria for Good Planning", *Management Solutions*, v. 31, September 1986, :23-26.

-------"Project Management: Setting Controls", *Management Solutions,* v. 31, November 1986, :31-3.

Argues that managing a project depends upon the establishment of, and adherence to, six project standards: (1) deadlines for accomplishing phases of work: (2) cost standards; (3) technical standards; (4) professional and ethical behaviour standards: (5) standards of cash flow and other budgetary considerations and; (6) administrative standards.

Craig, Dorothy P. Hip P*ocket Guide to Planning and Evaluation*. Learning Concepts, 1978. (Distributed by University Associates Inc., San Diego, C.A.)

FAMESA, *Management Manual* for *Productive R & D Strategic and Project Planning and Budgeting*. (Nairobi: ICIPE, 1984.)

The first of eight manuals to be developed by FAMESA. This comprehensive manual begins by introducing the needs for management training for national development. It progresses to chapters on "*R & D Management*", "*Organizing*", "*Planning*", "*Budgeting*", "*Proposing*" and "*Monitoring and Control*". This manual details management techniques through the presentation of concepts followed by exercises. It can be used as a self- instructional package or in group workshops. (IDRC Ottawa Library)

FAMESA, *Management Manual for Productive R & D: Facilities and Materials Management.* (Nairobi: ICIPE, 1986.)

This second manual focuses on the management or facilities and materials. Chapters include "*Strategic Facilities and Materials Management*", "*Overview of Procurement*", "*Land*". "*Buildings*", "*Equipment*", "*Materials*". It can be used as a self-instructional package or in group workshops. Contains exercises and extensive bibliography. (IDRC Ottawa Library).

Goodman, Louise J. and Ralph N. Love. *Management of Development Projects: An International Case Study Approach*. (Pergamon Press: New York:).

Introduces the Integrated Project Planning and Management Cycle (IPPMC) as a conceptual tool for observing and analyzing the life of a development project. Provides five case studies and a concluding chapter outlining the major factors in the IPPMC which enable the reader to understand on-going projects within a comprehensive framework. (IDRC Ottawa Library)

------- *Project Planning and Management: An Integrated Approach.* (New York: Pergamon Press).

The second in a series of books (the first cited above) on project management in developing countries. Introduces the concept of the integrated project planning and management cycle (IPPMC) and its four phases on the context of development projects: Phase I - Planning, Appraisals, and Design; Phase II - Selection, Approval, and Activation: Refinement. The final chapter provides an overview of development projects and policy context within which they operate.

Hahn, Ron D. *"Ideas to Action: A Project Blueprint", Personnel Journal,* V. 66, (February 1987): 66-78.

Presents a seven phase blueprint for managing special projects. The seven phases of project management are: conceptualization; feasibility analysis; detailed project planning; development and construction; implementation; post-project implementation review and sign off.

Gilbreath, Robert D. *Winning at Project Management, What Fails and Why.* New York: John Urley and Sons, 1986.

Hersey, Paul and Ken Blanchard. *Management of Organizational Behaviour, Utilizing Human Resources*, 4th Edition, Englewood Cliffs, N.J.: Prentice Hall, 1982.

Major reference for theory of Situational Leadership discussed in Chapter 7.

Hayfield, Frank *"Teamwork on International Projects"* in *Project Management and Tools and Visions,* Report of the 7th World Congress on Project Management, (Copenhagen, PROJEKTPLAN, 1980) 631- 641.

Discusses the basic steps of a team building process and the importance of team spirit, with particular emphasis on the responsibilities of the project manager.

Kanada, John and Husack, Glen, *Financial Management for Development Agencies* (Manitoba Institute of Management, Inc., Winnipeg, Manitoba and The Environment Laision Centre, Nairobi, Kenya, 1986).

Major reference for description of the financial model presented in Chapter 18.

Kelley, Albert J. 1982. *New Dimensions of Project Management,* Mass.: Lexington Books, 1982).

Provides a history of project management with chapters on: policy and environment; strategy and planning; project control and risk management and; organizing and managing human resources. (IDRC Ottawa Library).

Kerzner, Harold. *Project Management: A Systems Approach to Planning, Scheduling and Controlling*, 2nd Edition, New York: Van Nostrand Reinhold Company, 1984).

The major text in the field of project management.

Lackman, Michael, "Controlling the Development Management Cycle: Part 1--Guidelines for a Project Manager; Part 2--Profile of a Successful Project Manager; Part 3--Tools for Successful Project Management", *Journal of Systems Management V.38, #2 (February 1987): 7-29.*

Manitoba Institute of Management. *Managing Development Projects.* Winnipeg, Manitoba, 1986.

Reference manual for Chapter 10 "Developing Action Plans.

Mulvaney, John. *Analysis Bar Charting, A Simplified Critical Path Analysis Technique.* Washington, D.C.: Management Planning and Control Systems, 1969.

A very practical and useful book. Techniques described here are incorporated into Chapter 10, "Developing Action Plans".

Randolph, Allan W. and Barry Posner. *Effective Project Planning and Management - Getting the Job Done*. Englewood Cliffs, N.J.: Prentice Hall, 1988.

White, Louise G. *Creating Opportunities for Change - Approaches to Managing Development Programs*. Colorado: Lynne Rienner, 1987.

Presents a basic management framework and explores six approaches within this framework that have been influential in the development literature. Chapters deal with: rational analysis; organizing anarchy; the bureaucratic process; institutional analysis; social learning and political influence and the importance of effective management and organization for the attainment of development goals.

Williamson, John N. ed., *The Leader Manager*. New York: John Wiley and Sons, 1984.

Major reference for Chapter 7, The Leader Manager.

Meeting Evaluation

At the close of the seminar, participants were asked to evaluate all aspects of the meeting. A summary of the responses follows:

1. Did you remember to write down your own personal goal for this meeting? What was it? Did you find the meeting helped you achieve the goal?

The replies to this question could be divided into five different objectives. The five objectives are listed with a frequency count.

Number of Responses	**Objectives**
10	To exchange information with other project leaders.
10	The meeting met expectations.
4	To improve knowledge of IDRC and their policies and procedures.
4	The meeting exceeded expectations.
3	To learn more about STI project management.
2	To interact with IDRC resource people.
1	To improve my project management skills.

2. If not, why not?

Number of Responses	
2	IDRC case studies would be useful.
1	The goal was not fully achieved. Most people still experience problems in establishing a database to satisfy small industry.
1	Not enough time to assimilate material in depth. Seminar material should be distributed before the seminar.
1	Problems encountered understanding and speaking English.

3. Which other objectives, in your opinion were not met?

1	Presentations highlighting the accomplishments of each project and the problems they are facing.
1	Discussion about networking systems.

4. Which aspects of the meeting were most valuable? List in order of priority - 1 2 3 4 5 6 etc.

	Order of Priority											
	1	2	3	4	5	6	7	8	9	10	11	12
Opportunity to meet colleagues engaged in similar activities	8	5	1	2	1	2	1	1	1	1	0	0
Greater understanding, IDRC-Project relationship	8	2	2	2	3	3	2	1	0	0	0	0
Goal planning	2	3	4	2	2	3	2	3	0	1	0	0
Planning/decision-making exercises	2	1	5	4	1	1	4	1	2	0	1	1
Sectoral meetings	1	4	4	3	1	1	0	3	0	2	2	0
Participation in problem solving	0	5	2	1	2	4	2	2	1	3	0	1
Leadership theory	2	3	1	1	6	2	4	1	1	0	2	0
Discussion on MGC	0	0	0	3	3	1	2	4	3	1	3	1
Financial management	0	1	1	2	0	1	2	4	5	3	2	0
Financial reporting	0	1	0	3	1	1	1	1	5	5	3	1
Interactive management games	0	0	2	0	2	4	2	3	0	1	4	3
Chance to visit other IDRC supported project	0	1	3	1	1	0	2	1	1	0	2	8

5. What is your opinion of the twinning exercise? Do you feel this was valuable?

Everybody agreed that the exercise was useful. In fact adjectives such as innovative, exciting, fantastic and excellent were used in the participants comments.

6. Do you have any suggestion for its improvement?

Number of Responses	
9	More time required for the exercise.
2	The exercise was too structured.

2	Participants should have been able to choose their own partner.
2	Simplify the forms used in the exercise.
1	Twinning should be formalized between institutions.
1	Resources are now required for us to visit each other.
1	Rather than twinning, groups of 4 should have been considered.
1	There was confusion about the objective of the exercise. Was it to be implemented or was it just an exercise?
1	Follow-up and operation of the twinning plan was not formalized and will depend on the commitment of the two partners involved.

7. Do you think that after participating in this meeting you will feel more confident in planning project activities and managing your project?

8. Did the meeting help you gain confidence in project design?

There was unanimous agreement on items 7 and 8. There were 24 affirmative answers to both of these questions.

9. What could have been done to improve the participation of meeting participants?

10. What could have been done to increase the opportunity for exchange among participants?

Number of Responses	
11	Not enough time after the formal sessions for informal discussions about common problems.
2	Background papers should have been supplied in all 3 working languages.
2	Extend the duration of the meeting.
2	Hold cross sectoral meetings based on the project's area of specialization.
1	Translation services should have been available at sectoral meetings.
1	Offer translation services for Spanish speakers.

1	Wrap-up sessions at 16:30.
1	More time for sectoral meetings.
1	Hold sectoral meetings earlier in the session.

11. Please write any additional comments or suggestions you may have about twinning.

Number of Responses	
4	We did not have enough time to properly prepare an action plan.
4	The idea was excellent and the experience valuable.
3	The exercise was a success but no follow-up was formalized.
1	We have made personal contacts. We are now proposing an exchange of documents. A personal visit will be more useful.
1	I was able to learn about the experiences of my partner in order to stengthen the weak areas of my project.
1	If the purpose of the twinning is to share resources and experiences, one could have more than one partner.
1	The exercise was too structured.
1	Twinning is a very positive way of maximizing resources, sharing problems and finding workable solutions.
1	When choosing twins choose those who are close by and, if possible, speak the same language.
1	The twinning exercise could have been done at the sectoral group level.

12. Which of the materials were not well suited to the meeting content?

Number of Reponses	
18	All materials chosen were excellent.
1	There should have been a list of documents presented.
1	A few documents were available only in English. All working documents should have been translated into French beforehand.

1	Too much emphais on the MCG.

13. In general, how did you feel about the level of difficulty of the exercises/material?

Number of Responses	
20	About right.
1	Too easy.

14. Which materials do you expect to be most useful to you back on the job and how?

Number of Responses	
10	Project planning.
6	Leadership theory.
4	All.
3	Training program clarification.
3	Managing the financial aspect of the project.
3	IDRC evaluations.
3	IDRC equipment and captital resources.
2	Decision making.
2	Reporting to IDRC.
2	IDRC project design.
1	Summary of the meeting and the recommendations.
1	Design and promotion project output.

15. What could be done to make the materials more useful to you?

Number of Responses	
5	Materials were very suitable.

4	Send out materials before the meeting.
2	Include visual aids in handout material.
1	More practical problem solving.
1	Explanation on the possibility of vertical shifting of the budget allocation.
1	Make the materials less IDRC specific.
1	Provide case studies of IDRC projects.

16. In what ways did the meeting objectives differ from your own needs?

Number of Responses	
10	Met all my needs.
2	Surpassed expectations.
1 1	Didn't expect to spend so much time on financial issues since I attended a financial meeting of project leaders supported by IDRC last year in China.
1	The structure of my organization does not fit neatly into the typical management hierarchy of most organizations so some areas may have to be handled differently.
1	Too IDRC project tailored in some instances.
1	Too much time spent on IDRC procedures which I have known for a long time.

17. In what ways was the meeting inappropriate to the needs and practices in your own country?

Number of Responses	
8	Meeting was appropriate.
1	Directed to librarians and therefore fell out of my area.
1	Local conditions may not allow us to use the recommended project managment practices.
1	Attention to cultural attitudes.

1	The meeting established a base to rely on while adapting it to the needs and practices of our respective countries.

18. What could have been done to adapt the meeting better to your needs?

Number of Responses	
4	More time for the meeting required
3	The meeting was fine as it was.
1	Case studies of the best projects.
1	More in depth discussions on project management.
1	More time spent designing specific objectives related to project management.
1	More time for formal interaction with program officers.
1	Provide translation of working documents.
1	To know more specific information about the objectives of specific projects.
1	Data base management.
1	Case studies presented by the participants.
1	Public relations and communication.

19. Which topics should have been added?

Number of Responses	
2	Data base management.
2	Public relations, communication.
2	Personnel management and planning.
1	Specific issues/barriers to information dissemination.
1	Broader spectrum on output and services of an information centre.
1	Presentations by project leaders.

1	Case study of selected successful projects.
1	Question/Answer evaluation procedures.
1	Data processing.
1	Participation in the AGRIS/CARIS/RESADOC information systems.

20. What were the most important new things you learned?

5	Leadership theory.
5	Project planning and project management.
4	Better understanding of Information Sciences Division.
2	Obtained a better understanding of the type of leader I am.
2	Role of the project manager.
2	Divergent thinking - creative thinking.
1	The basics of management (planning, objectives, evaluating, etc.).
1	Greater familiarity with other projects.
1	Setting project goals and objectives.
1	Everything was important.
1	How obliging IDRC is in helping third world countries in development.

21. What barriers do you foresee in being able to apply what you learned during the meeting?

Number of Responses	
4	No real barriers.
1	Project has already started.
1	Management may not understand the motives of IDRC and its implementation procedures.
1	I don't have enough background concerning information services. I cannot understand many acronyms during lecture hours. I must review the materials derived from the meeting.

1	The unstable institutional budget.
1	The management structure of my organization.
1	Ingrained procedures (administrative) in host country.
1	Financial restraints.

22. Did you find the advanced information useful?

Number of Responses	
23	Yes, most useful.

23. Were you satisfied with the handling of your travel expenses? If no, state why.

16	Participants were completetly satisfied.
1	No, the travel routing was too gruelling. Better connections could have been arranged.
1	The tickets were booked by Ottawa and there were difficulties in arriving, meals, etc. If it is left in our hands we could arrange our own stopovers with the travel agents who would have given us opportunities to re-route our travel.
1	There was no consideration given to en route expenses and upon arrival, participants should be given cash not cheques. This proved embarassing to individuals travelling with limited cash.
1	I felt as if I am a prisoner. I am expecting a hard day in Jeddah when I overnight there. It is necessary to give participants all their per diem allowances.
1	Calculation of the final payment was not clear.
1	There was difficulty finding a place to sleep on in-transit stop-overs.
1	It would have been simpler for IDRC to pay for the rooms and meals and give the participants the balance of the money right away rather than giving them a cheque which could be cashed only in one's country. It is while travelling and while staying at ILCA that the money was needed.
1	The living allowance given was not adequate given cost of living in this country.

Additional Comments:

In the future, this type of meeting should be held over two weeks The agenda was too heavy for one week. It was difficult to go through the background papers since we were involved in the twinning exercise or sectoral meetings during the evenings.

May have been useful to have pre and post-testing to quantify learning during week, in selected areas.

More time with program officer.

Minor irritant - having to pay for all meals.

Small budget for meeting for photocopying documents from fellow participants and ICLA library materials relevant to project. It would have been useful to have a photocopier available to participants to maximize information sharing. ICLA library should have been open 1-2 nights.

Coffee breaks should be close to meeting room - or, to save time, the coffee could have been available during the meeting.

Papers should have been circulated before the meeting.

Mechanism should be developed to allow project managers to tap the resources of all other projects through a manager contact network.

I regret not being able to get to know more of the city and its people. It is also very important to know some aspects of the environment because these are the determinants in the presentation, understanding and point of view of the projects. Realities are sometimes very different in different developing countries.

The formation of the computer user's network was a very positive development.

The meeting was a very positive one. Objectives and expectations were exceeded. The only problem that I had was not having enough time to read all the information we were given. Perhaps it would have been better to have had all the information beforehand. Let me record my thanks for the opportunity of participating in this excellent meeting.

For each of the following, the number of responses to each point on the scale is listed directly below the scale.

1. How clear were the objectives of the meeting to you?

Not at all clear	1	2	3	4	5	6	Very clear
			2		8	13	

2. To what extent did the meeting achieve its stated objectives?

Not at all	1	2	3	4	5	6	To a great extent
			1	2	9	11	

3. To what extent have the meeting expectations been fulfilled?

Not at all	1	2	3	4	5	6	To a great extent
				4	11	4	

4. How relevant was the meeting to the needs and practices in your country?

Not at all	1	2	3	4	5	6
				3	13	7

5. How helpful was the meeting in assisting you to solve specific problems?

Not at all helpful	1	2	3	4	5	6	Very helpful
			2	4	9	8	

6. To what extent did you learn something new from attending this meeting?

Not at all	1	2	3	4	5	6	To a great extent
			6	10	7		

7. How effectively did the meeting present a balanced view of the various policy alternatives?

Not at all effectively	1	2	3	4	5	6	Very effectively
				5	9	5	

8. To what extent were you able to exchange ideas and experience with others?

Not at all	1	2	3	4	5	6	To a great extent
			7	7		9	

9. How effectively were formal presentations and exercises/materials used during the meeting?

Not at all effective	1	2	3	4	5	6	Very effective
		1	6	11	5		

10. How effectively were audiovisuals used during the meeting?

Not at all effective	1	2	3	4	5	6	Very effective
			2	8	8	4	

c) Administrative Arrangements

11.How satisfied were you with hostel accommodation:?

Very dissatisfied	1	2	3	4	5	6	Very satisfied
	1		6	6	10		

12. How satisfied were you with travel arrangements to and from Addis Ababa:?

Very dissatisfied	1	2	3	4	5	6	Very satisfied
	1	2		4	3	13	

13. How satisfied were you with assistance from IDRC/ILCA?

Very dissatisfied	1	2	3	4	5	6	Very satisfied
					3	20	

List of Participants

Mr. Roger Aldover, (Philippines), Information Network on New and Renewable Energy Resources and Technology for Asia and the Pacific.

Drs Alwinur, (Indonesia), Indonesian Fisheries Information System (INFIS).

Ms. Jacqueline Archer, (Trinidad & Tobago), Patents: Technological Information - Caribbean.

M. Meissa Dieng, (Senegal), Information Agricole (AGRIS).

Ms. Shirley Evelyn, (Trinidad & Tobago), Caribbean Agricultural Information System (CAGRIS).

Mr. Boris Fabres, (Trinidad & Tobago), Fisheries Management Information (FIMIS).

M. Jacques Faye, (Burkina Faso), Reseau d'etudes des systemes de Production en Afrique de l'Ouest (RESPAO).

Mr. Michael Hailu, (Ethiopia), Animal Production Information (ILCA) Africa.

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